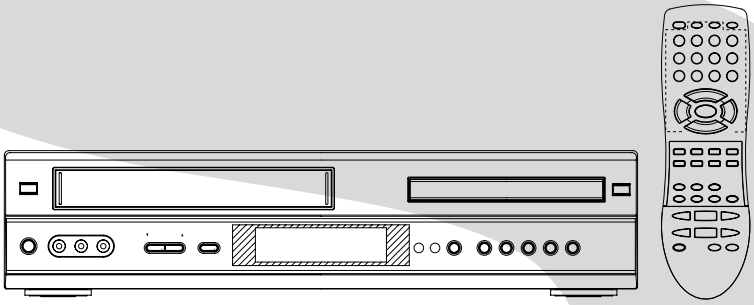
TOSHIBA

FILE NO. 810-200222

SERVICE MANUAL

DVD VIDEO PLAYER & VIDEO CASSETTE RECORDER

SD-V280UA
SD-V280CA



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TOSHIBA

DVD VIDEO PLAYER & VIDEO CASSETTE RECORDER

SD-V280A

OWNER'S MANUAL

VHS Hi-Fi

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IMPORTANT SAFEGUARDS

CAUTION
RISK OF ELECTRIC SHOCK DO NOT OPEN

CAUTION: TO REDUCE THE RISK OF ELECTRIC SHOCK, DO NOT REMOVE COVER (OR BACK). NO USER-SERVICEABLE PARTS INSIDE. REFER SERVICING TO QUALIFIED SERVICE PERSONNEL.

The lightning flash with arrowhead symbol, within an equilateral triangle is intended to alert the user to the presence of uninsulated dangerous voltage within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.

The exclamation point within an equilateral triangle is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.

WARNING: **TO REDUCE THE RISK OF FIRE OR ELECTRIC SHOCK, do not expose this appliance to rain or moisture.**

CAUTION: TO PREVENT ELECTRIC SHOCK DO NOT USE THIS POLARIZED PLUG WITH AN EXTENSION CORD, RECEPTACLE OR OTHER OUTLET UNLESS THE BLADES CAN BE FULLY INSERTED TO PREVENT BLADE EXPOSURE.

WARNING: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications.
However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

CAUTION: Changes or modifications not expressly approved by the partly responsible for compliance with the FCC Rules could void the user's authority to operate this equipment.

CAUTION: THIS DIGITAL VIDEO PLAYER EMPLOYS A LASER SYSTEM.

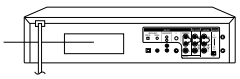
TO ENSURE PROPER USE OF THIS PRODUCT, PLEASE READ THIS USER'S GUIDE CAREFULLY AND RETAIN FOR FUTURE REFERENCE. SHOULD THE UNIT REQUIRE MAINTENANCE, CONTACT AN AUTHORIZED SERVICE LOCATION-SEE SERVICE PROCEDURE.

USE OF CONTROLS, ADJUSTMENTS OR THE PERFORMANCE OF PROCEDURES OTHER THAN THOSE SPECIFIED HEREIN MAY RESULT IN HAZARDOUS RADIATION EXPOSURE.

TO PREVENT DIRECT EXPOSURE TO LASER BEAM, DO NOT TRY TO OPEN THE ENCLOSURE. VISIBLE LASER RADIATION MAY BE PRESENT WHEN THE ENCLOSURE IS OPENED. DO NOT STARE INTO BEAM.

Location of the required Marking
The rating sheet and the safety caution are on the rear of the unit.

CERTIFICATION: COMPLIES WITH FDA RADIATION PERFORMANCE STANDARDS, 21 CFR SUBCHAPTER J.



IMPORTANT SAFEGUARDS

1. **READ INSTRUCTIONS**
   All the safety and operating instructions should be read before the unit is operated.
2. **RETAIN INSTRUCTIONS**
   The safety and operating instructions should be retained for future reference.
3. **HEED WARNINGS**
   All warnings on the unit and in the operating instructions should be adhered to.
4. **FOLLOW INSTRUCTIONS**
   All operating and use instructions should be followed.
5. **CLEANING**
   Unplug this unit from the wall outlet before cleaning. Do not use liquid cleaners or aerosol cleaners. Use a damp cloth for cleaning the exterior cabinet only.
6. **ATTACHMENTS**
   The manufacturer of this unit does not make any recommendations for attachments, as they may cause hazards.
7. **WATER AND MOISTURE**
   Do not use this unit near water. For example, near a bathtub, washbowl, kitchen sink, laundry tub, in a wet basement, or near a swimming pool.
8. **ACCESSORIES**
   Do not place this unit on an unstable cart, stand, tripod, bracket, or table. The unit may fall, causing serious injury, and serious damage to the unit.

PORTABLE CART WARNING (symbol provided by RETAC)

S3125A

8A. An appliance and cart combination should be moved with care. Quick stops, excessive force, and uneven surfaces may cause the appliance and cart combination to overturn.

9. **VENTILATION**
   Slots and openings in the cabinet back or bottom are provided for ventilation, to ensure reliable operation of the unit, and to protect it from overheating. These openings must not be blocked or covered. The openings should never be blocked by placing the unit on a bed, sofa, rug, or other similar surface. This unit should never be placed near or over a radiator or heat source. This unit should not be placed in a built-in installation such as a bookcase or rack unless proper ventilation is provided and/or the manufacturer's instructions have been adhered to.
10. **POWER SOURCE**
    This unit should be operated only from the type of power source indicated on the rating plate. If you are not sure of the type of power supply to your home, consult your appliance dealer or local power company. For units intended to operate from battery power, or other sources, refer to the operating instructions.
11. **GROUNDING OR POLARIZATION**
    This unit is equipped with a polarized alternating-current line plug (a plug having one blade wider than the other). This plug will fit into the power outlet only one way. This is a safety feature. If you are unable to insert the plug fully into the outlet, try reversing the plug. If the plug should still fail to fit, contact your electrician to replace your obsolete outlet. Do not defeat the safety purpose of the polarized plug, if your unit is equipped with a 3-wire grounding-type plug, a plug having a third (grounding) pin. This plug will only fit into a grounding-type power outlet. This too, is a safety feature. If you are unable to insert the plug into the outlet, contact your electrician to replace your obsolete outlet.Do not defeat the safety purpose of the grounding-type plug.
12. **POWER-CORD PROTECTION**
    Power-supply cords should be routed so that they are not likely to be walked on or pinched by items placed upon or against them, paying particular attention to cords at plugs, convenience receptacles, and the point where they exit from the appliance.

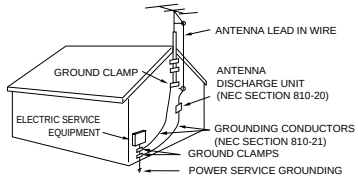
IMPORTANT SAFEGUARDS

13. **LIGHTNING**
To protect your unit from a lightning storm, or when it is left unattended and unused for long periods of time, unplug it from the wall outlet and disconnect the antenna or cable system. This will prevent damage to the unit due to lightning and power line surges.
14. **POWER LINES**
An outside antenna system should not be located in the vicinity of overhead power lines or other electric light or power circuits, or where it can fall into such power lines or circuits. When installing an outside antenna system, extreme care should be taken to keep from touching such power lines or circuits, as contact with them might be fatal.
15. **OVERLOADING**
Do not overload wall outlets and extension cords, as this can result in a risk of fire or electric shock.
16. **OBJECT AND LIQUID ENTRY**
Do not push objects through any openings in this unit, as they may touch dangerous voltage points or short out parts that could result in fire or electric shock. Never spill or spray any type of liquid into the unit.
17. **OUTDOOR ANTENNA GROUNDING**
If an outside antenna or cable system is connected to the unit, be sure the antenna or cable system is grounded to provide some protection against voltage surges and built-up static charges, Section 810 of the National Electrical Code, ANSI/NFPA 70, provides information with respect to proper grounding of the mast and supporting structure, grounding of the lead-in wire to an antenna discharge unit, size of grounding conductors, location of antenna discharge unit, connection to grounding electrodes, and requirements for the grounding electrode.
18. **SERVICING**
Do not attempt to service this unit yourself as opening or removing covers may expose you to dangerous voltage or other hazards. Refer all servicing to qualified service personnel.
19. **DAMAGE REQUIRING SERVICE**
Unplug this unit from the wall outlet and refer servicing to qualified service personnel under the following conditions:
    a. When the power-supply cord or plug is damaged.
    b. If liquid has been spilled, or objects have fallen into the unit.
    c. If the unit has been exposed to rain or water.
    d. If the unit does not operate normally by following the operating instructions. Adjust only those controls that are covered by the operating instructions, as an improper adjustment of other controls may result in damage and will often require extensive work by a qualified technician to restore the unit to its normal operation.
    e. If the unit has been dropped or the cabinet has been damaged.
    f . When the unit exhibits a distinct change in performance, this indicates a need for service.
20. **REPLACEMENT PARTS**
When replacement parts are required, be sure the service technician uses replacement parts specified by the manufacturer or those that have the same characteristics as the original part.
Unauthorized substitutions may result in fire, electric shock or other hazards.
21. **SAFETY CHECK**
Upon completion of any service or repairs to this unit, ask the service technician to perform safety checks to determine that the unit is in proper operating condition.
22. **HEAT**
The product should be situated away from heat sources such as radiators, heat registers, stoves, or other products (including amplifiers) that produce heat.
23. **DISC TRAY**
Keep your fingers well clear of the disc tray as it is closing. It may cause serious personal injury.
24. **CONNECTING**
When you connect the product to other equipment, turn off the power and unplug all of the equipment from the wall outlet. Failure to do so may cause an electric shock and serious personal injury. Read the owner's manual of the other equipment carefully and follow the instructions when making any connections.

IMPORTANT SAFEGUARDS / Power Source

25. **LASER BEAM**
Do not look into the opening of the disc tray or ventilation opening of the product to see the source of the laser beam. It may cause sight damage.
26. **DISC**
Do not use a cracked, deformed, or repaired disc. These discs are easily broken and may cause serious personal injury and product malfunction.
27. **NOTE TO CATV SYSTEM INSTALLER**
This reminder is provided to call the CATV system installer's attention to Article 820-40 of the NEC that provides guidelines for proper grounding and, in particular, specifies that the cable ground shall be connected to the grounding system of the building, as close to the point of cable entry as practical.

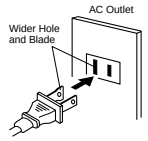
EXAMPLE OF ANTENNA GROUNDING AS PER THE NATIONAL ELECTRICAL CODE


ANTENNA LEAD IN WIRE
GROUND CLAMP
ANTENNA DISCHARGE UNIT (NEC SECTION 810-20)
ELECTRIC SERVICE EQUIPMENT
GROUNDING CONDUCTORS (NEC SECTION 810-21)
GROUND CLAMPS
POWER SERVICE GROUNDING ELECTRODE SYSTEM (NEC ART 250, PART H)

NEC-NATIONAL ELECTRICAL CODE
S2898A

CONDENSATION
Moisture will form in the operating section of the DVD/VCR if the player is brought from cool surroundings into a warm room or if the temperature of the room rises suddenly. When this happens, the DVD/VCR's performance will be impaired.
To prevent this, let the DVD/VCR stand in its new surroundings for about an hour before switching it on, or make sure that the room temperature rises gradually.
Condensation may also form during the summer if the DVD/VCR is exposed to the breeze from an air conditioner. In such cases, change the location of the DVD/VCR.

Power source



Polarized AC Cord Plug
(One blade is wider than the other.)

TO USE AC POWER SOURCE
Use the AC polarized line cord provided for operation on AC. Insert the AC cord plug into a standard 120V 60Hz polarized AC outlet.

Notes:
- Never connect the AC line cord plug to other than the specified voltage (120V 60Hz). Use the attached power cord only.
- If the polarized AC cord does not fit into a non-polarized AC outlet, do not attempt to file or cut the blade. It is the user's responsibility to have an electrician replace the obsolete outlet.
- If you cause a static discharge when touching the unit and the unit fails to function, simply unplug the unit from the AC outlet and plug it back in. The unit should return to normal operation.

Precautions

Notes on handling

- When shipping the DVD/VCR, the original shipping carton and packing materials come in handy. For maximum protection, repack the unit as it was originally packed at the factory.
- Do not use volatile liquids, such as insect spray, near the DVD/VCR. Do not leave rubber or plastic products to contact the DVD/VCR for a prolonged period. They will leave marks on the finish.
- The top and rear panels of the DVD/VCR may become warm after a long period of use. This is not a malfunction.
- When the DVD/VCR is not in use, be sure to remove the disc and the video cassette turn off the power.
- If you do not use the DVD/VCR for a long period, the unit may not function properly in the future. Turn on and use the DVD/VCR occasionally.

Notes on locating

- Place the DVD/VCR on a level surface. Do not use it on a shaky or unstable surface such as a wobbling table or inclined stand. The loaded disc or the video tape may become dis-aligned and damage the DVD/VCR.
- When you place this DVD/VCR near a TV, radio, or VCR, the playback picture may become poor and the sound may be distorted. In this case, place the DVD/VCR away from the TV, radio, or VCR.

Notes on cleaning

Use a soft, dry cloth for cleaning.
- For stubborn dirt, soak the cloth in a weak detergent solution, wring well and wipe. Use a dry cloth to wipe it dry.
  Do not use any type of solvent, such as thinner and benzine, as they may damage the surface of the DVD/VCR.
- If you use a chemical saturated cloth to clean the unit, follow that product's instructions.

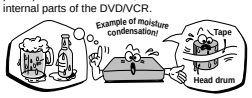
To obtain a clear picture

The DVD/VCR is a high technology, precision device. If the video head, the head drum, the optical pick-up lens or disc drive parts are dirty or worn down, the picture quality will deteriorate. To obtain a clear picture, we recommend regular inspection and maintenance (cleaning or parts replacement) every 1,000 hours of use depending on the operating environment. For details, contact your nearest dealer.

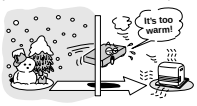
Notes on moisture condensation

Moisture condensation damages the DVD/VCR. Please read the following carefully.

Moisture condensation occurs, for example, when you pour a cold drink into a glass on a warm day. Drops of water form on the outside of the glass. In the same way, moisture may condense on the head drum or the optical pick-up lens inside this unit, one of the most crucial internal parts of the DVD/VCR.

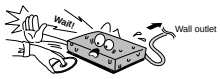


■ **Moisture condensation occurs during the following cases.**
- When you bring the DVD/VCR directly from a cold place to a warm place.
- When you use the DVD/VCR in a room where you just turned on the heater, or a place where the cold wind from the air conditioner directly hits the unit.
- In summer, when you use the DVD/VCR in a hot and humid place just after you move the unit from an air conditioned room.
- When you use the DVD/VCR in a humid place.



■ **Do not use the DVD/VCR when moisture condensation may occur.**

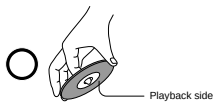
If you use the DVD/VCR in such a situation, it may damage discs and internal parts. Remove the disc or the video tape, connect the power cord of the DVD/VCR to the wall outlet, turn on the DVD/VCR, and leave it for two or three hours. After two or three hours, the DVD/VCR will have warmed up and evaporated any moisture. Keep the DVD/VCR connected to the wall outlet and moisture condensation will seldom occur.



Notes on discs

On handling discs

- Do not touch the playback side of the disc.



- Do not attach paper or tape to discs.

On cleaning discs

- Fingerprints and dust on the disc cause picture and sound deterioration. Wipe the disc from the center outwards with a soft cloth. Always keep the disc clean.

- If you cannot wipe off the dust with a soft cloth, wipe the disc lightly with a slightly moistened soft cloth and finish with a dry cloth.
- Do not use any type of solvent such as thinner, benzine, commercially available cleaners or antistatic spray for vinyl LPs. It may damage the disc.

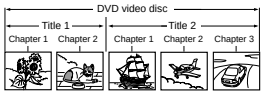
On storing discs

- Do not store discs in a place subject to direct sunlight or near heat sources.
- Do not store discs in places subject to moisture and dust such as a bathroom or near a humidifier.
- Store discs vertically in a case. Stacking or placing objects on discs outside of their case may cause warping.

Structure of disc contents

Normally, DVD video discs are divided into titles, and the titles are sub-divided into chapters. VIDEO CDs and audio CDs are divided into tracks.

DVD video disc



VIDEO CD/audio CD

Each title, chapter or track is assigned a number, which is called "title number", "chapter number" or "track number" respectively.
There may be discs that do not have these numbers.

Notes on copyright

It is forbidden by law to copy, broadcast, show, broadcast on cable, play in public, and rent copyrighted material without permission.

This device does not tape-record copy protected DVD Video Discs.
The device is not to be used for copying copyrighted content without the express written permission of the copyright owner.
Obtaining such permission is the sole responsibility of the user.

This product incorporates copyright protection technology that is protected by method claims of certain U.S. patents and other intellectual property rights owned by Macrovision Corporation and other rights owners. Use of this copyright protection technology must be authorized by Macrovision Corporation, and is intended for home and other limited viewing uses only unless otherwise authorized by Macrovision Corporation. Reverse engineering or disassembly is prohibited.

Notes on discs (continued)

About this owner's manual

This owner's manual explains the basic instructions of this DVD/VCR. Some DVD video discs are produced in a manner that allows specific or limited operation during playback. As such, the DVD/VCR may not respond to all operating commands. This is not a defect in the DVD/VCR. Refer to instruction notes of discs.

"🖐" may appear on the TV screen during operation. A "🖐" means that the operation is not permitted by the DVD/VCR or the disc.

Notes on region numbers

The region number of this DVD/VCR is 1. If region numbers, which stand for their playable area, are printed on your DVD video disc and you do not find "ALL" or "1", disc playback will not be allowed by the player. (In this case, the DVD/VCR will display a message on-screen.)

On VIDEO CDs

This DVD/VCR supports VIDEO CDs equipped with the PBC (Version 2.0) function. (PBC is the abbreviation of Playback Control.) You can enjoy two playback variations depending on types of discs.

- **VIDEO CD not equipped with PBC function (Version 1.1)**
  Sound and movie can be played on this DVD/VCR in the same way as an audio CD.
- **VIDEO CD equipped with PBC function (Version 2.0)**
  In addition to operation of a VIDEO CD not equipped with the PBC function, you can enjoy playback of interactive software with search function by using the menu displayed on the TV screen (Menu Playback). Some of the functions described in this owner's manual may not work with some discs.

Playable discs

This DVD/VCR can play the following discs.

	Disc Mark	Contents	Disc Size	Maximum playback time
DVD video discs	DVD VIDEO	Audio + video (moving pictures)	12 cm	Approx. 4 hours (single sided disc)
				Approx. 8 hours (double sided disc)
	DVD VIDEO		8 cm	Approx. 80 minutes (single sided disc)
				Approx. 160 minutes (double sided disc)
VIDEO CDs	DIGITAL VIDEO	Audio + video (moving pictures)	12 cm	Approx. 74 minutes
			8 cm	Approx. 20 minutes
Audio CDs	DIGITAL AUDIO	Audio	12 cm	Approx. 74 minutes
			8 cm (CD single)	Approx. 20 minutes

The following discs are also available.
● CD-R
● CD-RW
CD-R/RW discs recorded by CD-DA method can be played. Some CD-R/RW discs may be incompatible.

- You cannot play discs other than those listed above.
- You cannot play discs of DVD-RAM, DVD-RW, etc., or non standardized discs even if they may be labeled as above.
- This DVD/VCR uses the NTSC color system, and cannot play DVD video discs recorded in any other color system (PAL, SECAM, etc.).

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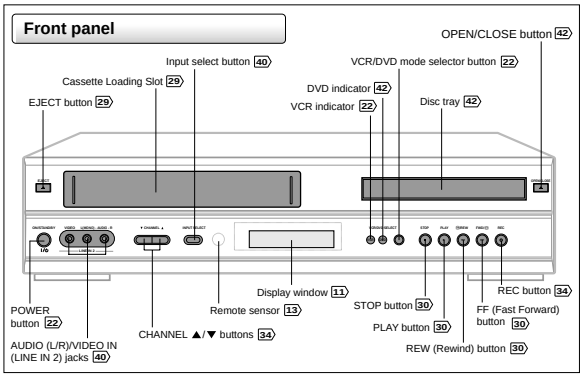
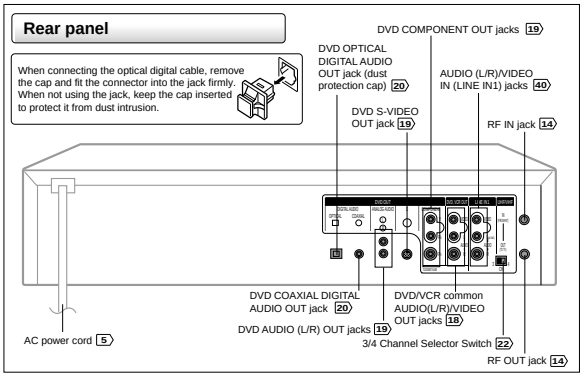
Identification of Controls

See the page in ▭ for details.

Front panel



Rear panel


When connecting the optical digital cable, remove the cap and fit the connector into the jack firmly. When not using the jack, keep the cap inserted to protect it from dust intrusion.
DVD COMPONENT OUT jacks 19
DVD OPTICAL DIGITAL AUDIO OUT jack (dust protection cap) 20
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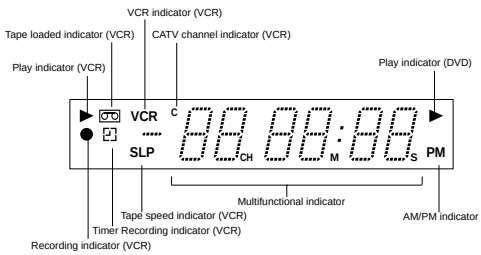
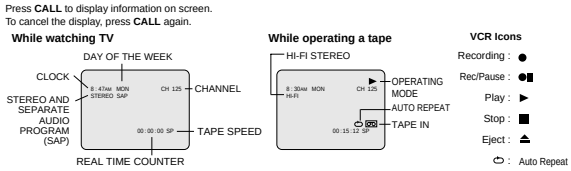
DVD/VCR common AUDIO(L/R)/VIDEO OUT jacks 18
DVD AUDIO (L/R) OUT jacks 19
3/4 Channel Selector Switch 22
RF OUT jack 14
AC power cord 5

Display window



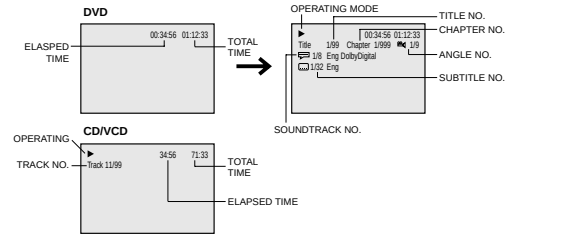
VCR operation Status

Press **CALL** to display information on screen.
To cancel the display, press **CALL** again.



DVD/CD/VCD operation Status

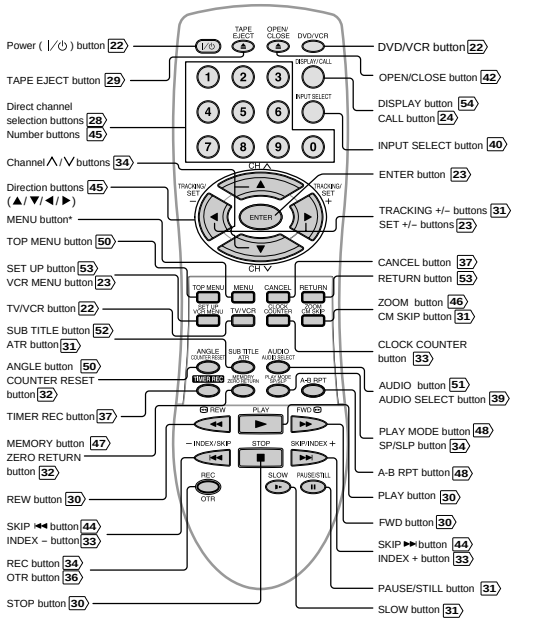
Each Press of **DISPLAY**, the status display of the disc will appear on the screen and change as follows.



Identification of Controls (continued)

The instructions in this manual describe the functions on the remote control. See the page in ⬭ for details.

Remote control



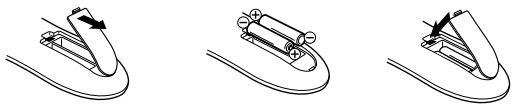
*** MENU button**
Use the MENU button to display the menu included on many DVD video discs. To operate a menu, follow the instructions in "DVD Menu." 50

Inserting Batteries

1 Open the battery compartment cover in the direction of the arrow.

2 Install two "AAA" batteries (supplied), paying attention to the polarity diagram in the battery compartment.

3 Replace the compartment cover.



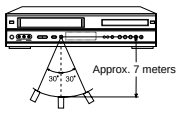
Battery precautions

The precautions below should be followed when using batteries in this device:
1. Use only the size and type of batteries specified.
2. Be sure to follow the correct polarity when installing the batteries as indicated in the battery compartment. Reversed batteries may cause damage to the device. To avoid a potential short circuit, insert the "–" end first.
3. Do not mix different types of batteries together (e.g. Alkaline and Carbon-zinc) or old batteries with fresh ones.
4. If the device is not to be used for a long period of time, remove the batteries to prevent damage or injury from possible battery leakage.
5. Do not try to recharge batteries not intended to be recharged; they can overheat and rupture. (Follow battery manufacturer's directions.)

Remote control basics

- Press **POWER (|/⏻)** to turn the DVD/VCR on or off.
- Select your desired operating mode (DVD or VCR) using **DVD/VCR**. (DVD or VCR indicator on the front panel will show you which mode is selected.)
- Press **CH** ⋀ or **CH** ⋁ to move through the channels one channel at a time.
- The **CH** ⋀/⋁ **(▲/▼)** and **SET +/– (◀ / ▶)** are also used to navigate on-screen menu system.
- You can directly access specific channels using **Number buttons**.
- Each press of **DVD/VCR** on the remote control, switches the screen between the VCR screen (VCR mode) and the DVD screen (DVD mode).

Operation
- Aim the remote control at the remote sensor and press control buttons to operate.
- Operate the remote control within 30° angle on either side of the remote sensor, up to a distance of Approx. 7 meters.



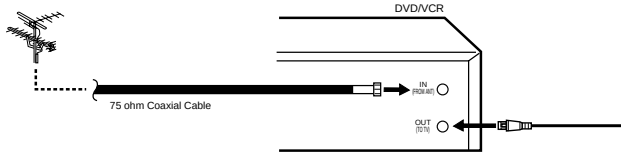
Antenna connections

If you are using an antenna system, follow these instructions. If you are a cable (CATV) subscriber, skip ahead to page 16 for the proper connections.

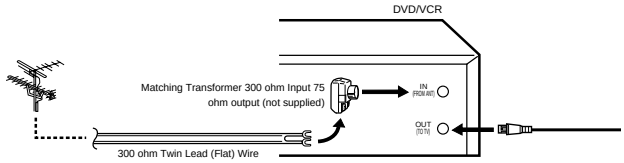
Antenna to DVD/VCR connection

The DVD/VCR must be connected "between" the antenna and the TV. First, disconnect the antenna from the TV and connect it to the DVD/VCR. Then connect the DVD/VCR to the TV. Below are 3 common methods of connecting an antenna system to a DVD/VCR. Find the type of antenna system you are using and follow the connection diagram.

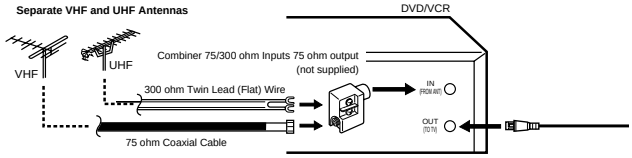
1 **Combination VHF/UHF Antenna with 75 ohm Coaxial Cable**



2 **Combination VHF/UHF Antenna with 300 ohm Twin Lead (Flat) Wire**



3 **Separate VHF and UHF Antennas**



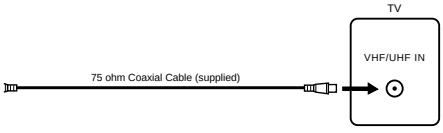
Note: If both VHF and UHF antennas have 300 ohm twin lead (flat) wires, use a combiner having two 300 ohm inputs and one 75 ohm output.

Notes:
- A clear picture will not be obtained by the DVD/VCR unless the antenna signal is good. Connect the antenna to the DVD/VCR properly.
- For better quality recording, an indoor antenna or a telescopic antenna is not recommended. The use of an outdoor type antenna is required.
- If you are not sure about the connection, please refer to qualified service personnel.

DVD/VCR to TV connection

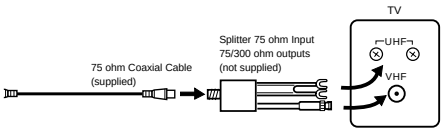
After you have connected the antenna to the DVD/VCR, you must connect the DVD/VCR to the TV. Below are 3 common methods of connecting your DVD/VCR to a TV. Find the type of TV you are using and follow the connection diagram.

This DVD/VCR has a single 75 ohm output for connection to a TV. If your TV has separate VHF and UHF antenna inputs (numbers 2 and 3 below), use a splitter to connect the DVD/VCR to the TV for VHF and UHF reception.



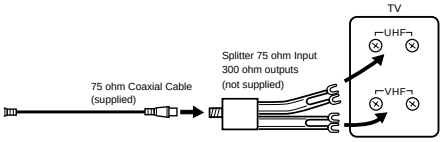
Note: **If a VHF or UHF antenna is used, set the TV/CATV menu option to the "TV" mode.**

TV with single 75 ohm VHF/UHF antenna input



Note: **If a VHF or UHF antenna is used, set the TV/CATV menu option to the "TV" mode.**

TV with 300 ohm UHFand 75 ohm VHF antenna inputs



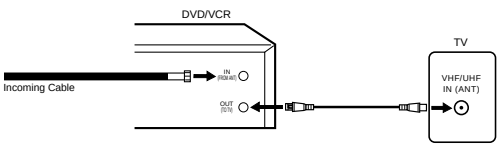
Note: **If a VHF or UHF antenna is used, set the TV/CATV menu option to the "TV" mode.**

TV with 300 ohm UHF and 300 ohm VHF antenna inputs

CATV (CABLE TV) connections

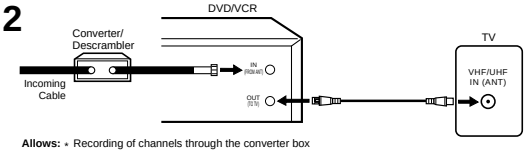
Many cable companies offer services permitting reception of extra channels including pay or subscription channels. This DVD/VCR has an extended tuning range and can be tuned to most cable channels without using a cable company supplied converter box, except for those premium channels which are intentionally scrambled. If you subscribe to a premium channel which is scrambled, you must have a descrambler box for proper reception.

1



Allows:
- Recording of nonscrambled channels.
- Use of the programmable timer.
- Recording of one channel while watching another.

2

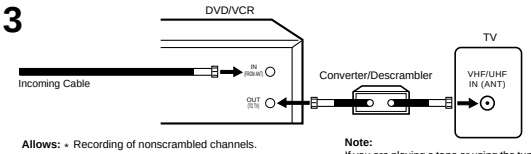


Allows:
- Recording of channels through the converter box (scrambled and unscrambled).
- Using the programmable timer to record only the channel selected at the converter box.

Prevents:
- Recording one channel while watching another.
- Using the DVD/VCR tuner to select channels.

Note:
To record from converter/descrambler, DVD/VCR tuner must be tuned to the converter output channel, usually channel 3 or 4.

3



Allows:
- Recording of nonscrambled channels.
- Use of the programmable timer.
- Recording an unscrambled channel while watching any channel selected at the converter box.

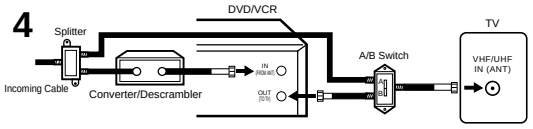
Prevents: Recording scrambled channels.

Note:
If you are playing a tape or using the tuner built into the DVD/VCR, the converter must be set to the video channel output of the DVD/VCR (either 3 or 4).

Note: Whenever a Converter/Descrambler box is placed before the DVD/VCR, you must tune the DVD/VCR to the output of the Converter/Descrambler box, usually channel 3 or 4.

IMPORTANT: Make sure the TV/CATV menu option is set to the "CATV" mode.
This DVD/VCR cannot receive scrambled programs since it does not contain a descrambler. In order to receive scrambled programs, your existing descrambler must be used. Descrambler boxes are available from cable companies. Consult your local cable company for more information concerning connection to their descrambler equipment. There are many ways to connect your DVD/VCR to a cable system. Below are six common methods of connection.

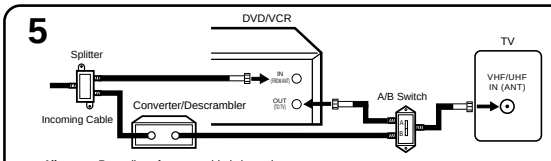
4



Allows:
- Recording of one channel while watching another.
- Using the programmable timer to record only the channel selected at the converter box.
- Recording of all channels through the converter box.

Prevents:
- Watching scrambled channels while recording another channel.
- Using the DVD/VCR tuner to select channels.

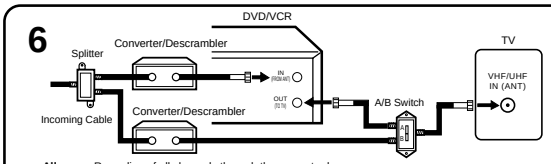
5



Allows:
- Recording of nonscrambled channels.
- Recording of one channel while watching another.
- Watching premium channels through the converter while recording nonscrambled channels.
- Using the programmable timer.

Prevents: Recording scrambled channels.

6



Allows:
- Recording of all channels through the converter box.
- Recording a scrambled or unscrambled channel while watching another (scrambled or unscrambled) channel.
- Using the programmable timer to record only the channel selected at the converter box.

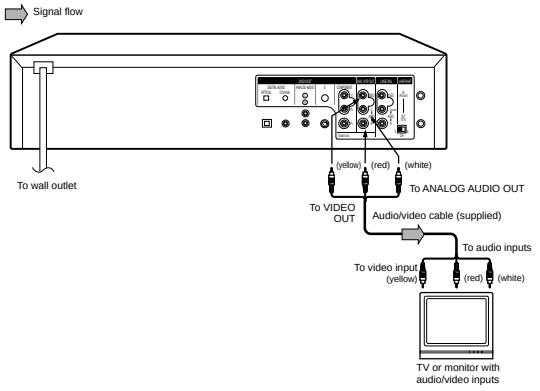
Prevents: Using the DVD/VCR tuner to select channels.

Connecting to a TV

Connect the DVD/VCR to your TV.

Note: This method transports VHS and DVD-video signals. For enhanced DVD-video performance, we recommend you also connect the S-video or ColorStream® component video outputs to your TV/monitor. (see page 19.)

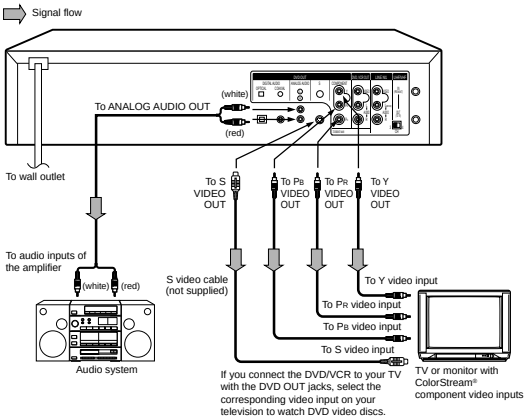
Connecting to a TV



Notes:
- Refer to the owner's manual of the connected TV as well.
- When you connect the DVD/VCR to your TV, be sure to turn off the power and unplug both units from the wall outlet before making any connections.
- If your television set has one audio input, connect the left and right audio outputs of the DVD/VCR to a Y cable adapter (not supplied) and then connect to your TV.
- Connect the DVD/VCR directly to your TV. If you connect the DVD/VCR to a VCR, TV/VCR combination or video selector, the playback picture may be distorted as DVD video discs are copy protected.

Note: VCR and DVD are output from the composite video output. The S-video output and component video output transports the DVD-video signal exclusively and will deliver enhanced DVD video picture performance.

Connecting to an audio system and TV equipped with S video input/component video inputs


Signal flow
To ANALOG AUDIO OUT
(white)
(red)
To wall outlet
To S VIDEO OUT
To PB VIDEO OUT
To PR VIDEO OUT
To Y VIDEO OUT
To audio inputs of the amplifier
(white)
(red)
S video cable (not supplied)
To Y video input
To PR video input
To PB video input
To S video input
Audio system
If you connect the DVD/VCR to your TV with the DVD OUT jacks, select the corresponding video input on your television to watch DVD video discs.
TV or monitor with ColorStream® component video inputs

Component video (ColorStream®) outputs/inputs
Some TVs or monitors are equipped with component video inputs. Connecting to these inputs allows you to enjoy the highest quality DVD picture playback.
Actual labels for component video inputs may vary depending on the TV manufacturer. (ex. Y, R-Y, B-Y or Y, C_B, C_R)
In some TVs or monitors, the color levels of the playback picture may be reduced slightly or the tint may change. In such a case, adjust the TV or monitor for optimum performance.

Notes:
- Refer to the owner's manual of the connected equipment as well.
- When you connect the DVD/VCR to other equipment, be sure to turn off the power and unplug all of the equipment from the wall outlet before making any connections.
- If you place the DVD/VCR near a tuner or radio, the radio broadcast sound might be distorted. In this case, place the DVD/VCR away from the tuner and radio.
- The output sound of the DVD/VCR has a wide dynamic range. Be sure to adjust the receiver's volume to a moderate listening level. Otherwise, the speakers may be damaged by a sudden high volume sound.
- Turn off the amplifier before you connect or disconnect the DVD/VCR's power cord. If you leave the amplifier power on, the speakers may be damaged.
- An S-Video connection is superior to Video (Yellow) output. Use this method for DVD playback when the connected television has S-Video input, and does not have component video inputs.

Connecting to optional equipment

You can enjoy high quality dynamic sounds of DVD video discs or audio CDs by connecting the DVD/VCR to optional audio equipment.

For connection to your TV, see "Connecting to a TV" 18, 19.

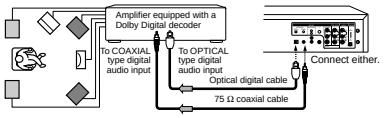
: Front speaker : Center speaker
: Rear speaker ⇨ : Signal flow
: Sub woofer

Connecting to an amplifier equipped with a Dolby Digital decoder

Dolby Digital
Dolby Digital is the surround sound technology used in theaters showing the latest movies, and is now available to reproduce this realistic effect in the home. You can enjoy motion picture and live concert DVD video discs with this dynamic realistic sound by connecting the DVD/VCR to a 6 channel amplifier equipped with a Dolby Digital decoder or Dolby Digital processor. If you have a Dolby Pro Logic Surround decoder, you will obtain the full benefit of Pro Logic from the same DVD movies that provide full 5.1-channel Dolby Digital soundtracks, as well as from titles with the Dolby Surround mark.

Manufactured under license from Dolby Laboratories. "Dolby" "Pro Logic" and the double-D symbol are trademarks of Dolby Laboratories. Confidential unpublished works. ©1992-1997 Dolby Laboratories. All rights reserved.

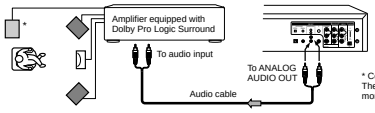
- Use DVD video discs encoded via the Dolby Digital recording system.


Amplifier equipped with a Dolby Digital decoder
To COAXIAL type digital audio input
To OPTICAL type digital audio input
Optical digital cable
75 Ω coaxial cable
Connect either.

Connecting to an amplifier equipped with Dolby Pro Logic Surround

Dolby Pro Logic Surround
You can enjoy the dynamic realistic sound of Dolby Pro Logic Surround by connecting an amplifier and speaker system (right and left front speakers, a center speaker, and one or two rear speakers).

- With an amplifier equipped with Dolby Digital
  Connect the equipment the same way as described in "Connecting to an amplifier equipped with a Dolby Digital decoder." Refer to that amplifier's owner's manual and set the amplifier so you can enjoy Dolby Pro Logic Surround sound.
- With an amplifier not equipped with Dolby Digital
  Connect the equipment as follows.



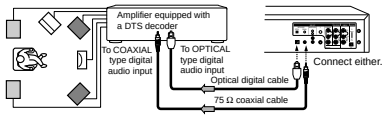
* Connect one or two rear speakers.
The output sound from the rear speakers will be monaural even if you connect two rear speakers.

Connecting to an amplifier equipped with a DTS decoder

Digital Theater Systems (DTS)
DTS is a high quality surround technology used in theaters and now available for home use, on DVD video discs or audio CDs.
If you have a DTS decoder or processor, you can obtain the full benefit of 5.1 channel DTS encoded sound tracks on DVD video discs or audio CDs.

"DTS" and "DTS Digital Surround" are trademarks of Digital Theater Systems, Inc.

- Use DVD video discs or audio CDs encoded via the DTS recording system.

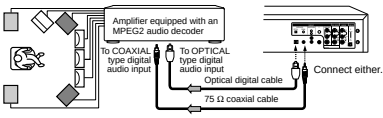

Amplifier equipped with a DTS decoder
To COAXIAL type digital audio input
To OPTICAL type digital audio input
Optical digital cable
75 Ω coaxial cable
Connect either.

Warning
When playing DTS-encoded discs (DVD/VCR), excessive noise may be output from the analog stereo jacks. To avoid possible damage to the audio system, you should take proper precautions when the ANALOG AUDIO OUT (L/R) jacks of the DVD/VCR are connected to an amplification system. To enjoy DTS Digital Surround™ playback, an external 5.1 channel DTS Digital Surround™ decoder system must be connected to the BITSTREAM/PCM AUDIO OUT jack of the DVD/VCR.

Connecting to an amplifier equipped with an MPEG2 audio decoder

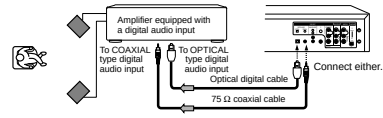
MPEG2 sound
You can enjoy motion picture and live concert DVD video discs with dynamic realistic sound by connecting an amplifier equipped with an MPEG2 audio decoder or MPEG2 audio processor.

- Use DVD video discs encoded via the MPEG2 recording system.


Amplifier equipped with an MPEG2 audio decoder
To COAXIAL type digital audio input
To OPTICAL type digital audio input
Optical digital cable
75 Ω coaxial cable
Connect either.

Connecting to an amplifier equipped with a digital audio input

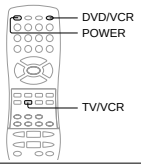
2 channel digital stereo
You can enjoy the dynamic sound of 2 channel digital stereo by connecting an amplifier equipped with a digital audio input and speaker system (right and left front speakers).


Amplifier equipped with a digital audio input
To COAXIAL type digital audio input
To OPTICAL type digital audio input
Optical digital cable
75 Ω coaxial cable
Connect either.

Notes:
- DO NOT connect the BITSTREAM/PCM AUDIO OUT jack of the DVD/VCR to the AC-3 RF input of a Dolby Digital Receiver. This input on your A/V Receiver is reserved for Laserdisc use only and is incompatible with the BITSTREAM/PCM AUDIO OUT jack of the DVD/VCR.
- Connect the BITSTREAM/PCM AUDIO OUT jack of the DVD/VCR to the "OPTICAL" or "COAXIAL" input of a Receiver or Processor.
- Refer to the owner's manual of the connected equipment as well.
- When you connect the DVD/VCR to other equipment, be sure to turn off the power and unplug all of the equipment from the wall outlet before making any connections.
- The output sound of the DVD/VCR has a wide dynamic range. Be sure to adjust the receiver's volume to a moderate listening level. Otherwise, the speakers may be damaged by a sudden high volume sound.
- Turn off the amplifier before you connect or disconnect the DVD/VCR's power cord. If you leave the amplifier power on, the speakers may be damaged.

Setting the video channel

When a TV is connected with the 75 ohm coaxial cable only.
To view playback of a recorded tape or DVD disc, or to watch a program selected by the VCR's channel selector, the TV must be set to channel 3 or 4 (video channel).



Setting the video channel

1 **Press POWER to turn on the DVD/VCR.**

2 **Press DVD/VCR to select the VCR mode.**

DVD/VCR

The VCR indicator on the front panel will light.

3 **Set the 3/4 Channel selector switch on the rear panel to CH 3 or 4.**

3 4 CH

4 **Turn ON the TV and set to CH 3 or 4 to correspond with the channel selected in step 3.**

5 **Press TV/VCR to select the VCR position.**

TV/VCR

The VCR indicator will appear in the display window.

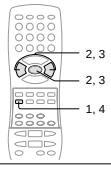
6 Select any channel to receive a TV station in your area. The channel number will appear on the screen for about 4 seconds.

■ For a push-button TV tuner
If CH 3 or 4 corresponding to the video channel cannot be tuned on your TV, proceed as follows: set the VCR 3/4 channel selector and the TV to CH 3 or 4, play back a prerecorded tape and tune the TV to receive a sharp color picture from the video cassette recorder. Refer to your TV owner's manual for details.

Notes:
- **If the unit does not operate properly, or No key operation (by the unit and/or the remote control):** Static electricity, etc., may affect the player's operation. Disconnect the AC power cord once, then connect it again.
- When you turn on the DVD/VCR which has disc inside, DVD playback will start automatically.
  If the operating mode was VCR, when you turned on the DVD/VCR which has disc inside, it will play back automatically and stop after about 5 minutes.
- During the DVD playback if you change the operating mode from DVD to VCR, the DVD will continue to play back the disc and stop after about 5 minutes.

Setting the language

You can choose from three different languages (English, French and Spanish) for the on-screen displays.



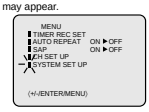
Setting the language

Preparation:
- Turn ON the TV and select to the corresponding video input.
- Press **DVD/VCR** to select the VCR mode. (The VCR indicator will light.)

1 **Press VCR MENU.**

SET UP VCR MENU

If you use the unit for the first time and press **VCR MENU**, instead of the main menu screen on the right the "SYSTEM SET UP" menu screen in step **2** may appear.



2 **Press SET + or – to select "LANGUAGE", then press ENTER.**

3 **Press SET + or – to select the desired language: English (ENGLISH), Spanish (ESPAÑOL) or French (FRANCAIS), then press ENTER.**

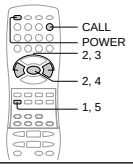
4 **Press VCR MENU until the MENU screen is cleared.**

SET UP VCR MENU

Notes:
- Both the VCR and the DVD have their own player menus 53.
- If no buttons are pressed for more than 60 seconds, the VCR MENU screen will return to normal TV-operation automatically.

Clock setting

The Auto Clock function will automatically set the built-in clock (Month, Day, Year and Time) when the DVD/VCR is connected to an Antenna or Cable system and it is turned off. The DVD/VCR searches for a station in your area containing the necessary Auto clock setting signals. Once received, it will take approximately 4 minutes for the clock to set itself automatically.



Auto clock setting

Preparation:

- Turn ON the TV and select the corresponding video input.
- Press **DVD/VCR** to select the VCR mode. (The VCR indicator will light.)

1 **Connect the Antenna or Cable system.**
- If you use a cable box, turn it on.

2 **Plug the AC Power cord to the AC outlet.**

3 **Make sure the DVD/VCR is turned off.**
- If you press **POWER**, the Auto Clock set is not programmed.

4 **Wait at least three minutes and press POWER.**

5 **Press CALL to check the clock setting on the on screen display.**

DISPLAY/CALL

6 **If the clock is not set, check the antenna condition. The auto clock may not function properly if the reception condition is not good.**

Auto clock adjustment

The auto clock adjustment will be updated at 12:00 PM everyday if you turn off the DVD/VCR.

- If you use a cable box and you want auto clock adjustment to be performed, the cable box must be left on.
- The auto clock adjustment is not effective when there is a difference of more than 5 minutes exists between the built-in clock time and the actual time.

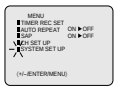
To set auto clock to off

When shipped from factory the AUTO CLOCK is set to "ON". But if you do not want auto clock set (Adjustment):

1 **Press VCR MENU.**

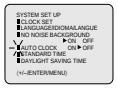
SET UP
VCR MENU

2 **Press SET + or – to select "SYSTEM SET UP", then press ENTER.**



3 **Press SET + or – to select "AUTO CLOCK".**

4 **Press ENTER to select "OFF".**



5 **Press VCR MENU repeatedly to return to the normal screen.**

SET UP
VCR MENU

- When the AUTO CLOCK is set to "OFF", the Auto Clock adjustment does not function.
- Set the clock manually 26.

To set standard time

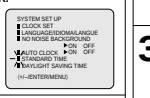
In the rare event that you live within broadcast range of two stations in two different time zones, the DVD/VCR may recognize the wrong station for the Auto Clock set. To correct the situation:

1 **Press VCR MENU.**

SET UP
VCR MENU

2 **Press SET + or – to select "SYSTEM SET UP", then press ENTER.**

3 **Press SET + or – to select "STANDARD TIME", then Press ENTER.**



4 **Press SET + or – to select your time zone, then press ENTER.**

ATLANTIC : GMT–4hours
EASTERN : GMT–5hours
CENTRAL : GMT–6hours
MOUNTAIN : GMT–7hours
PACIFIC : GMT–8hours
ALASKA : GMT–9hours
HAWAII : GMT–10hours
AUTO : AUTO SET
(GMT: Greenwich Mean Time)

5 **Press VCR MENU twice to return to the normal screen.**

SET UP
VCR MENU

Notes:

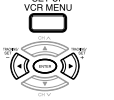
- To be able to select the standard time, the clock must first be set by "AUTO CLOCK" once.
- If you live in Newfoundland and the Auto Clock does not function properly, set the AUTO CLOCK menu option to OFF and set the clock manually.

To set daylight saving time

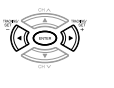
You can set the Daylight Saving Time automatically or manually.

1 **Press VCR MENU.**
Press SET + or – to select "SYSTEM SET UP", then press ENTER.

SET UP
VCR MENU



2 **Press SET + or – to select "DAYLIGHT SAVING TIME", then press ENTER.**



3 **Press SET + or – to select one of the options, then press ENTER. Press VCR MENU until the MENU screen is cleared.**

SET UP
VCR MENU

ON: for manual setting (forward one hour)
OFF: for manual setting (back one hour)
AUTO: for automatic setting (read XDS in the signal)

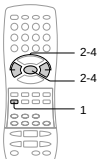
When you want to set the Daylight Saving Time manually, on the first Sunday in April you set to "ON", and on the last Sunday in October you set to "OFF".

Notes:

- When shipped from factory, the DAYLIGHT SAVING TIME is set to "AUTO" position.
- When the clock is not set, Daylight Saving Time setting is not available.
- When there is no Daylight Saving Time in your area, always select "OFF" position in step 3.

Clock setting (continued)

If the auto clock process did not set the date and time correctly, you must set them manually for timer recording and daylight saving time.



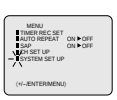
Manual clock setting

EXAMPLE: Setting the clock to "8:30 AM" October, 26 (SAT), 2002.

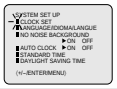
1 **Press VCR MENU.**

SET UP
VCR MENU

2 **Press SET + or – to select "SYSTEM SET UP", press ENTER.**



3 **Press SET + or – to select "CLOCK SET", then press ENTER.**



4 **Press SET + or – to set the month, then press ENTER.**

5 **Set the day, year and time as in step 4.**

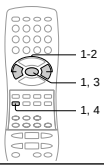
6 **After setting the clock, date and time starts functioning automatically.**

■**To make corrections any time during the process**
Press **CANCEL** repeatedly until the item you want to change blinks, then press **SET +** or **–**.

Note:
After a power failure or disconnection of the power, the timer settings will be lost. In this case, reset the present time.

Tuner setting

This DVD/VCR is equipped with a channel memory feature which allows channels to skip up or down to the next channel set into memory, skipping over unwanted channels. Before selecting channels, they must be programmed into the DVD/VCR's memory. In addition to normal VHF and UHF channels, this DVD/VCR can receive up to 113 Cable TV channels. To use this DVD/VCR with an antenna, set the TV/CATV menu option to the TV mode. When shipped from the factory, this menu option is in the CATV mode.



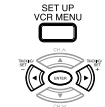
TV/CATV selection

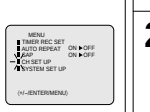
Preparation:

- Turn ON the TV and set to the video input mode.
- Press **DVD/VCR** to select the VCR mode. (The VCR indicator will light.)

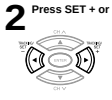
1 **Press VCR MENU. Press SET + or – to select "CH SET UP", then press ENTER.**

SET UP
VCR MENU





2 **Press SET + or – to select "TV/CATV".**



3 **Press ENTER to select the TV or CATV mode.**
The arrow indicates the selected mode.

TV - VHF/UHF channels
CATV - CABLE TV channels

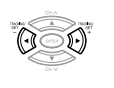
4 **Press VCR MENU until the menu screen is cleared.**

SET UP
VCR MENU

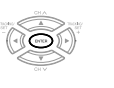
Note:
You can't select "CH SET UP" if you set the channel to "L1" or "L2".

Setting channels automatically

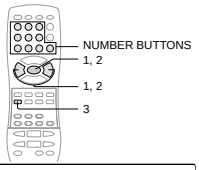
1 **Repeat left step 1 and press SET + or – to select "AUTO CH MEMORY".**



2 **Press ENTER.**
Auto tuning will begin. The channel display will count up and when finished, the screen returns to normal.



Tuner setting (continued)



To ADD/DELETE channels

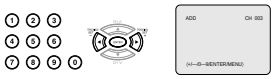
1 **Repeat the step 1 on page 27. Then press SET + or – to select the "ADD/DELETE" and press ENTER.**

2 **To Add or Delete desired channels**

1 Press **Number buttons** or **SET +** or **–** to select a channel number you want to add or delete.

2 **To add channels**
Press **ENTER** until "ADD" appears on the screen.
To delete channels
Press **ENTER** until "DELETE" appears on the screen. The channel number will blink.

3 Repeat 1 to 2 to add or delete other channel.



3 **Press VCR MENU until the menu screen is cleared.**

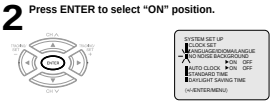
SET UP
VCR MENU

Noise elimination

When you don't want to receive a weak signal broadcast, a Blue back screen can be obtained by selecting the NO NOISE BACKGROUND "ON". When the unit is shipped from the factory, the NO NOISE BACKGROUND is set to "ON".

1 **Repeat the steps 1–2 on page 26 and press SET + or – to select "NO NOISE BACKGROUND".**

2 **Press ENTER to select "ON" position.**

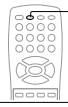


3 **Press VCR MENU until the menu screen is cleared.**

SET UP
VCR MENU

Loading and unloading a cassette tape

Use only video cassette tapes marked VHS and S-VHS.



Loading

Push the center of the tape until it is automatically inserted.

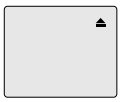
Insert the cassette tape with its labeled side facing up and the erase prevention tab positioned at your left. An inverted cassette tape cannot be inserted.

Automatic power ON
When you insert a cassette tape the DVD/VCR power will turn ON automatically.

Automatic playback
When loading a cassette tape without an erase prevention tab, playback will start automatically.

Unloading

1 Press **EJECT** on the front panel or **TAPE EJECT** on the Remote.

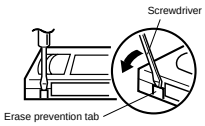


2 Remove the cassette tape.

Automatic tape eject
This DVD/VCR will automatically rewind the tape when the tape has ended. Once the tape is rewound to its beginning, the cassette tape will be ejected automatically.

To prevent accidental erasure

To prevent accidental erasure
Remove the erase prevention tab with a screwdriver.



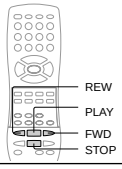
To record again
Cover the hole with a piece of adhesive tape.

Tape speed and maximum recording time

Tape Speed	Video cassette tape				
	T-160	T-120	T-90	T-60	T-30
SP (Standard Play)	2-2/3 hours	2 hours	1-1/2 hours	1 hour	30 minutes
SLP (Super Long Play)	8 hours	6 hours	4-1/2 hours	3 hours	1-1/2 hours

Cassette tape playback

To play a prerecorded tape.



Playback

Preparation:
- Turn ON the TV and select the corresponding video input.
- Press **DVD/VCR** to select the VCR mode. (The VCR indicator will light).

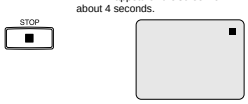
1 **Load a prerecorded tape**
(When loading a cassette tape without the erase prevention tab, playback will start automatically).

2 **To start playback**

Press **PLAY**.
Playback will start. " ▶ " will appear on the screen for about 4 seconds.

To stop playback

Press **STOP** once.
The tape will stop but remain fully loaded and ready to play.
" ■ " will appear on the screen for about 4 seconds.



Notes:
- This VCR selects the playback tape speed SP, LP or SLP automatically.
- The Cassette tape and DVD disc can be played back simultaneously. If you press **DVD/VCR**, the tape playback and DVD playback alternate with each other on the screen (via CH3, 4 or video connection).
- When you select the VCR mode during DVD playback, DVD playback will stop automatically after approx. 5 minutes.

Rewind or forward the tape

Stop the playback or recording via **STOP** on remote.

To rewind the tape:

Press **REW**.

To forward the tape:

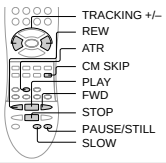
Press **FWD**.

To discontinue the tape-winding, press **STOP**. To switch to playback directly (without **STOP**), press **PLAY**.

■ Forward/Reverse picture search mode

When the tape is being winded, you can switch to picture search mode (see next page). To do this, press **REW** or **FWD** and hold it down. The unit will resume the tape advance or rewinding as soon as the button is released.

Special playback



Picture search

Reverse picture search function
Press **REW** once or twice during playback.
Forward picture search function
Press **FWD** once or twice during playback.
To return to playback, press **PLAY**.

SPEED SEARCH TIMES

TAPE SPEED	PICTURE SEARCH SPEED	
	PRESS ONCE	PRESS TWICE
SP (Standard Play)	3 X	5 X
LP (Long Play)	7 X	9 X
SLP (Super Long Play)	9 X	15 X

Still picture

Press **PAUSE** during playback.
To resume normal playback, press **PLAY** or **PAUSE/STILL**.

Slow motion

During playback press **SLOW**.
To return to playback, press **PLAY** or **SLOW**.

■ Slow tracking and vertical lock adjustment
If noise bars appear in the picture during slow motion, press the **TRACKING + / –** to reduce the noise bars. If the still picture jitters excessively, press **TRACKING + / –** to stabilize the still picture.

Frame by frame picture

Press **PAUSE/STILL** during playback.
Press **SLOW** repeatedly: The picture advances frame by frame.
To return to playback, press **PLAY** or **PAUSE/STILL**.

CM skip

Press **CM SKIP** during playback. The DVD/VCR will search forward through approximately 30 seconds of the tape (e.g. unwanted commercial time) for each press of **CM SKIP** (maximum six presses) and then resume normal playback.

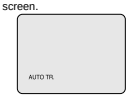
For example : 1 press: 30 seconds of tape
2 press: 60 seconds of tape
3 press: 90 seconds of tape

Adjusting tracking condition

■ Automatic tracking adjustment
Whenever you insert a tape and start playback, the automatic tracking feature continuously analyzes the signal to enable optimum picture quality during playback.

■ Manual tracking adjustment
If automatic tracking cannot eliminate noises well during playback, press **TRACKING +/–** to eliminate the noise. "MANUAL TR." will appear on the screen. Press it briefly for a fine adjustment, or press and hold for a coarse adjustment.

Press **ATR** to reactivate automatic tracking again. "AUTO TR." will appear on the screen.



Notes:
- The audio output is muted during SPEED SEARCH, STILL, FRAME ADVANCE and SLOW MOTION.
- During picture search mode there will be noise bars. This is not a defect.
- Playback will commence after approx. 5 minutes to protect the video tape against excessive wear during pause mode.

Video head cleaning

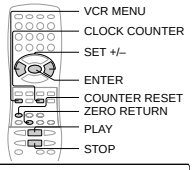
Video head clogging
■ The video heads are the means by which the DVD/VCR reads the picture from the tape during playback. In the unlikely event that the heads become dirty enough to be clogged, no picture will be displayed. This can easily be determined if, during playback of a known good tape, there is good sound, but no picture (picture is extremely snowy). If this is the case, have the DVD/VCR checked and cleaned by qualified service personnel.

Good Picture

Snowy Picture

Notes:
- DO NOT ATTEMPT TO CLEAN THE VIDEO HEADS OR SERVICE THE UNIT BY REMOVING THE REAR COVER.
- Video heads may eventually wear out and should be replaced when they fail to produce clear pictures.
- To help prevent video head clogging, use only good quality VHS tapes. Discard worn out tapes.

Convenience function



Repeat playback

The entire video tape will play until its end. The tape will automatically rewind to the beginning and the playback will be repeated.

1 **Press VCR MENU.**

Press SET + or – to select "AUTO REPEAT".

SET UP
VCR MENU

2 **Press ENTER to select "ON" or "OFF".**

If "ON" is selected, the playback will be repeated endlessly.

3 **Press VCR MENU until the menu screen is cleared.**

SET UP
VCR MENU

If you press CALL, "↩" will appear on the screen 11.

4 **To commence playback, press PLAY.**

The playback will be repeated endlessly.

PLAY

To cancel repeat mode:
Follow the above step **1**, then press **ENTER** to select "OFF" position. Press **VCR MENU** to return to the TV.

Zero return function

This function rewinds the tape to the 00:00:00 counter position automatically.

1 **Press CLOCK/COUNTER.**

The counter display shows the tape running time during playback or recording.

CLOCK
COUNTER

2 **Press COUNTER RESET at the desired tape position.**

The counter display will be reset to "00:00:00" position (e.g. the beginning of recording).

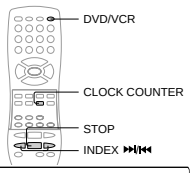
ANGLE
COUNTER RESET

3 **Press STOP when playback or recording is completed.**
Press ZERO RETURN.

The tape will automatically rewind or fast forward to the "00:00:00" counter position.

STOP

MEMORY
ZERO RETURN



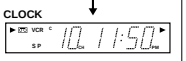
Clock/counter display

Press **CLOCK/COUNTER**. The clock and tape counter alternate with each other in the display window.

CLOCK
COUNTER

COUNTER

CLOCK

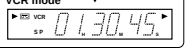


Press **DVD/VCR**. The DVD mode and the VCR mode alternate with each other in the display.

DVD/VCR

DVD mode

VCR mode



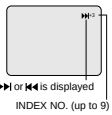
Notes:
- If you rewind the tape beyond "00:00:00", a minus sign ("–") will be displayed in front of the time.
- When you load a tape, the counter will reset to "00:00:00".
- The counter does not function on nonrecorded (blank) sections of the tape. When you rewind, fast forward or play tapes through blank sections, the counter stops.

Video index search system

This function enables you to locate the beginning of any recording made on the VCR.

Recording an INDEX MARK
The Index Search function automatically records an INDEX mark on the tape whenever a recording is initiated.

Index search
Press **INDEX** ⏭ or ⏮ during stop or play mode.
For Succeeding programs: Press **INDEX** ⏭.
For Preceding programs: Press **INDEX** ⏮.
(As many as 9 index points can be accessed via this method.)
When the **INDEX** ⏭ or ⏮ is pressed, the unit starts searching the INDEX NO. selected and finds the portion, then playback starts automatically. To stop the Index Search, press **STOP**.



Notes:
- When you record an INDEX mark at the very beginning of the tape, the mark may not be found.
- During INDEX search, the tape may stop and begin to play at a slightly different location.
- INDEX may not function properly with old or worn out video tapes.
- INDEX marks may not be found if it is extremely close to the point where the search began.
- In recording, if you stop recording temporarily, the INDEX mark is not recorded on the tape.

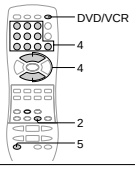
SQPB (S-VHS Quasi Playback)

You can playback video cassette tapes recorded in the S-VHS system.
However, the picture will not have the high resolution of S-VHS system.

Note: You cannot record S-VHS video format with this VCR.

Recording a TV program

Recording and viewing the same TV program



Recording a TV program

Preparation:
- Turn ON the TV and set to the video input mode.
- Press **DVD/VCR** to select the VCR mode. (The VCR indicator will light.)

1 **Load a cassette tape with the erase prevention tab intact.**

The DVD/VCR will automatically turn on.

2 **Press SP/SLP to select the desired tape speed SP or SLP.**

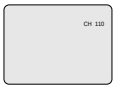
The tape counter and SP or SLP will appear on the screen for about 4 seconds.

PLAY MODE
SP/SLP

3 **Select "TV" or "CATV" to the appropriate position 27.**

TV - VHF/UHF channels
CATV - CABLE TV channels

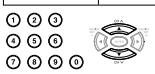
4 **Press Number button or CH ∧/∨ to select the channel to be recorded.**



1-9	Press **0** twice and then **1-9** as required. Example: To select 2, Press "**002**".
10-12	Press **0** first and then the remaining 2 digits in order from left to right. Example: Press **012** for "12".
13-99	Press 2 digits in order. Example: Press **22** for "22".
100-125	Press the 3 digits in order. Example: Press **110** for "110".

VHF/UHF/CATV CHANNELS

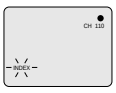
TV	CATV
VHF 2-13	VHF 2-13
UHF 14-69	STD/HRC/IRC 14-36 (A) (W) 37-59 (AA) (WW) 60-85 (AAA) (ZZZ) 86-94 (86) (94) 95-99 (A-5) (A-1) 100-125 (100)(125) 01 (5A)

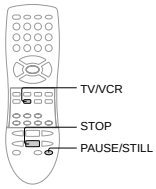


5 **Press REC.**

" ● " will appear on the screen for about 4 seconds and " ● " will appear on the display window.

REC
OTR





To stop recording

Press STOP to stop recording.

" ■ " will appear on screen for about 4 seconds.

STOP

■Auto Rewind feature
This VCR will automatically rewind the tape when the tape has ended (except during OTR and timer recording). It will also eject the tape.

To stop recording temporarily

Press PAUSE/STILL to avoid recording unwanted material. Press again to continue the recording.

" ●II " will appear on screen for about 4 seconds.

PAUSE/STILL

Notes:
- The pause function will be released after 5 minutes to prevent damage to the tape or the VCR. The VCR will change to the STOP mode.
- You can select a recording channel in the recording pause mode.

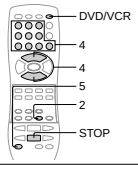
Recording one program while watching another

While the VCR is recording, select your desired channel on the TV.
When a TV is connected with an antenna cable only, press TV/VCR to select the TV position.
The "VCR" display will go off and recording will continue.
Select the TV channel you want to watch by using the TV channel selector.

Note:
Some CATV hookups do not permit viewing one channel while recording another. See pages 16 and 17.

One-touch Timer Recording (OTR)

The One-touch Timer Recording feature provides a simple and convenient way to make a timed recording.



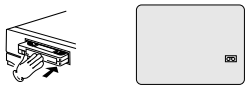
One-touch Timer Recording (OTR)

Preparation:
- Turn ON the TV and select the corresponding video input.
- Press **DVD/VCR** to select the VCR mode. (The VCR indicator will light.)

Example: One-touch Timer Recording for 30 minutes.

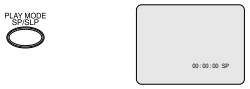
1 Load a cassette tape with the erase prevention tab intact.

The VCR will automatically turn on.



2 Press SP/SLP to select the desired tape speed SP or SLP.

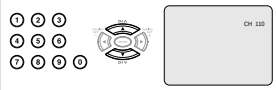
The tape counter and SP or SLP will appear on the screen for about 4 seconds.



3 Set "TV" or "CATV" option to the appropriate position 27.

TV - VHF/UHF channels
CATV - CABLE TV channels

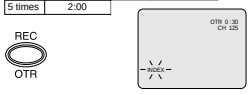
4 Press Number button or CH ∧/∨ to select the channel to be recorded.



5 Press OTR. Recording begins. Press the button again to stop recording after 30 minutes. Each additional press of OTR will increase recording time as shown in the chart below, up to a maximum of 5 hours.

The OTR and recording time will appear on the screen for about 4 seconds. And, " ● " will appear on the display.

Press	Recording time	Press	Recording time
once	NORMAL REC	6 times	3:00
twice	0:30	7 times	4:00
3 times	1:00	8 times	5:00
4 times	1:30	9 times	NORMAL REC
5 times	2:00		



To cancel OTR

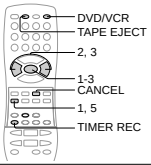
Press **STOP** or turn off the power.

" ■ " will appear on screen for about 4 seconds.

Note:
If you wish to watch the DVD playback during OTR or standard recording, press **DVD/VCR** to change to DVD mode and perform the DVD playback 43.

Timer recording

Timer recording can be programmed on-screen with the remote control. The built-in timer allows automatic unattended recording of up to 8 programs within 1 month.

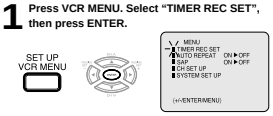


Timer recording

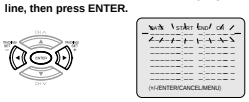
Preparation:
- Press **DVD/VCR** to select the VCR mode.
- Load a cassette tape with the erase prevention tab intact.
- Check the time and date are correct 24.

Example: Program a timer recording for the 26th day, channel 125 (CATV), 11:00 - 11:30 PM on timer program number 1 (Tape speed: SLP).

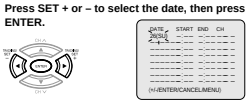
1 Press VCR MENU. Select "TIMER REC SET", then press ENTER.



2 Press SET + or – to select one of the program line, then press ENTER.



3 Press SET + or – to select the date, then press ENTER.



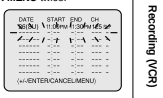
4 Set the start time, end time, channel and tape speed as in step 3.

Notes:
- Press **CANCEL** to move cursor backward for correction.
- To record from external source set the channel to "L1" or "L2". "L1" or "L2" will appear next to CH 125 (or 69).

5 To enter other programs, repeat step 2 through 4.

SET UP
VCR MENU

- To return to the normal screen, press **VCR MENU** twice.



6 Press TIMER REC. The timer symbol ( ) will appear on the display and the VCR stands by for recording.

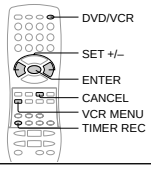
TIMER REC

At the same time, VCR mode will change to DVD mode automatically. You can use DVD even if the VCR is in the Timer recording mode.
If you do not use the DVD, turn the power off.

Notes:
- The timer recording will start at 5 seconds before the time you predetermined.
- If the timer symbol( ) does not appear on the display in spite of the pressing of **TIMER REC**, the cassette may not have been loaded. 29
- If the cassette is ejected in spite of the pressing of **TIMER REC**, the erase prevention tab of the cassette may have been removed. 29

Notes:
- If the timer symbol ( ) blinks when the timer recording ended, the TV program has not been completely recorded because of an insufficient tape length. Press **TIMER REC** to cancel the timer program or press **TAPE EJECT** to remove the cassette tape.
- During timer recording standby mode, the VCR mode cannot be operated. To use the VCR, press **TIMER REC** at first, then press **DVD/VCR** to change to VCR mode. After you use the VCR, press **TIMER REC** again to put the VCR into timer recording standby mode.
- If you press **TIMER REC** during timer recording, the recording operation will be interrupted. If you press **TIMER REC** again within the programmed time, the recording operation will start again.
- After a power failure or disconnection of the power plug, all programmed recording settings and time display will be lost upon resumption of power. In this case, reset the clock 24 and reprogram any timer recording.

Timer recording (continued)

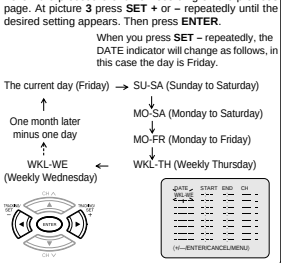


To set daily/weekly timer

Weekly (e.g. WKL-TU: each Tuesday) or daily (e.g. MO-SA: Monday to Saturday) Timer recording

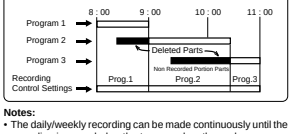
Follow the procedure of timer recording on the previous page. At picture **3** press **SET +** or **–** repeatedly until the desired setting appears. Then press **ENTER**.

When you press **SET –** repeatedly, the DATE indicator will change as follows, in this case the day is Friday.



If the programs overlap another

Do not overlap timer programs as portions of the conflicting programs will be lost. The first recording time has priority over the next recording time as shown in the diagram below.

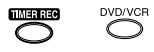


Notes:
- The daily/weekly recording can be made continuously until the recording is canceled or the tape reaches the end.
- During timer recording the automatic rewinding mechanism does not function.

To confirm or cancel a program

1 If the Timer has been activated, press TIMER REC to deactivate the Timer.

The timer symbol ( ) will disappear. Then press **DVD/VCR** to change to VCR mode.

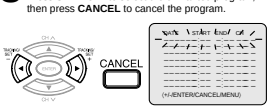


2 To confirm Timer program:

At picture **1** on the previous page select "TIMER REC SET" and press **ENTER**.
The timer program list will appear on the screen.

3 To cancel Timer program:

Press **SET +** or **–** to select the unwanted program, then press **CANCEL** to cancel the program.

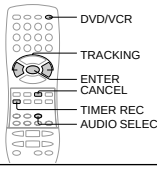


4 Press VCR MENU repeatedly until the menu screen is cleared.

SET UP
VCR MENU

Notes:
- If there are other timer record programs remaining, **TIMER REC** must be pressed to reactivate the timer, otherwise the remaining timer record programs will be ignored.
- You cannot confirm the Timer program during timer recording operation.
- You can correct or cancel a programmed setting in program confirm mode.

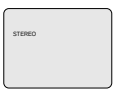
Stereo recording and playback / Separate Audio Program (SAP)



Stereo recording and playback

The VHS Hi-Fi audio system permits high fidelity recording of MTS STEREO TV broadcasts.

When a MTS STEREO broadcast is received, "STEREO" will appear on the screen and the program can be viewed or recorded in stereo.
The Hi-Fi stereo recording procedure is the same as for normal recordings.



Note:
When using a CATV system, stereo TV programs may be transmitted over a mono cable channel. In this case "STEREO" will not appear and the sound will be in mono.

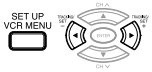
Output selection
When viewing an MTS stereo TV program, or playing a prerecorded VHS Hi-Fi stereo videotape, press **AUDIO SELECT** to select how the audio will be heard through the speakers. Normally set to the Hi-Fi stereo position, this button can be set to the MONO position if the stereo broadcast or videotape audio is of poor quality. The "R" and "L" positions allow the audio from the Right or Left Hi-Fi channel to be heard over both TV speakers. This button has no effect when viewing a MONO videotape or TV program. Each time when you press the button, OUTPUT SELECTION display appears on the screen for several seconds. Refer to the chart below.

OUTPUT SELECTION	SOUND HEARD ON BOTH SPEAKERS
STEREO	STEREO
L CH	LEFT CHANNEL AUDIO
R CH	RIGHT CHANNEL AUDIO
MONO	MONO

Separate Audio Program (SAP)

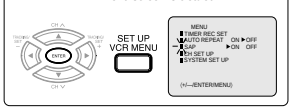
Your DVD/VCR is fitted with a SAP broadcast system which enables you to switch to a separate audio program when viewing a selected channel.
This function applies only when the program is broadcast in multi-languages through the SAP broadcast system.

1 Press VCR MENU. Then press SET + or – to select "SAP".



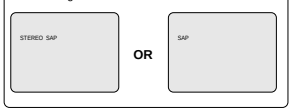
2 Press ENTER to select "ON".

Then press **VCR MENU** until the menu screen is cleared.



Listening to SAP

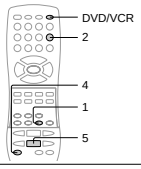
When the VCR is turned on or a channel selection is made, make certain the letters "SAP" appears on the screen. This means that the "Separate Audio Program" broadcasting is available.



Notes:
- When playing back a tape that is not recorded in Hi-Fi stereo mode, the audio will automatically be monaural.
- When listening to a VHS Hi-Fi video tape or MTS broadcast through the VHF/UHF jack (Audio/Video cord not connected), the sound will be monaural.

Duplicating a video tape

If you connect the DVD/VCR to another VCR or Camcorder, you can duplicate a previously recorded tape. Make all connections before turning on the power.



Duplicating a video tape

Preparation:
- Turn ON the TV and select the corresponding video input.
- Press **DVD/VCR** to select the VCR mode. (The VCR indicator will light.)
- Load a cassette tape with the erase prevention tab intact.
- Load a previously recorded tape into the playback VCR or Camcorder.

1 Press SP/SLP to select the desired tape speed SP or SLP.

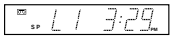
PLAY MODE SP/SLP

It is recommended that you set the Speed to the SP mode on the recording VCR for best results.

2 Press INPUT SELECT once or twice to select AUDIO/VIDEO input position.

"L1" or "L2" will appear in the display.

INPUT SELECT



L1: on the rear panel
L2: on the front panel

3 Press PLAY on the playback VCR or Camcorder.

4 Press REC on the recording VCR.

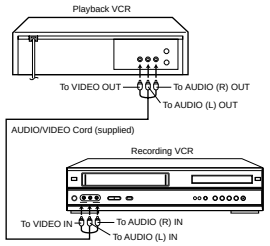
The duplicating process begins.

REC
OTR

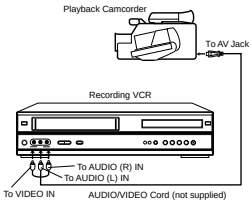
5 Press STOP after duplicating a video tape.

STOP

Connection with second video recorder



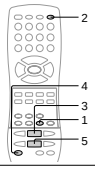
Connection with Camcorder



For duplicating a previously recorded tape from a camcorder, follow the camcorder manufacturer's instructions. A typical camcorder dubbing hookup is shown above.

Recording a DVD/CD disc

You can record disc material in DVD, Audio CD, etc. onto a Video tape with this DVD/VCR.



Duplicating a DVD or CD disc

Preparation:
- Turn ON the TV and select the corresponding video input.
- Press **DVD/VCR** to select the VCR mode. (The VCR indicator will light.)
- Load a cassette tape with the erase prevention tab intact.
- Load a DVD/CD disc.

1 Press SP/SLP to select the desired tape speed SP or SLP.

PLAY MODE SP/SLP

2 Press DVD/VCR to select the DVD mode.

The DVD indicator will light.

DVD/VCR

3 Press PLAY to start playback.

PLAY

4 Press REC to start recording.

REC
OTR

The DVD/VCR will change to the VCR mode automatically and the playback picture or sound will be duplicated on the video cassette tape.

5 Press STOP if you finish recording.

If you wish to stop a DVD/CD disc, press DVD/VCR to change the DVD mode, then press STOP.

STOP

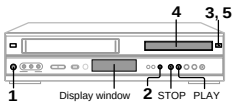
Notes:
- You may not be able to record the beginning of the disc. Begin VCR recording once program playback commances on the DVD.
- You can not record discs encorded with copy guard function. The following icon and text will show up on the TV screen.

DISC IS COPY PROTECTED

Playing a disc

This section shows you the basics on how to play a disc.

CAUTION
Keep your fingers well clear of the disc tray as it is closing. Neglecting to do so may cause serious personal injury.



Basic playback

Preparations:
- When you want to view a disc, turn on the TV and select the corresponding video input connected to the DVD/VCR. This may include S-video or component video inputs which are exclusive to DVD playback.
- When you want to enjoy the sound of discs from the audio system, turn on the audio system and select the input connected to the DVD/VCR.

1 Press the power button (I / ⏻).

ON/STANDBY I/⏻

The DVD/VCR turns on.

2 Press DVD/VCR to select the DVD mode.

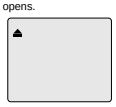
VCR/DVD SELECT

The DVD indicator will light.

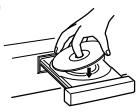
3 Press OPEN/CLOSE.

OPEN/CLOSE

The disc tray opens.



4 Place the disc on the disc tray.



With the playback side down

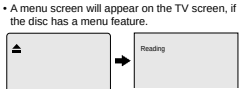
- There are two different disc sizes. Place the disc in the correct guide on the disc tray. If the disc is out of the guide, it may damage the disc and cause the DVD/VCR to malfunction.
- Do not place a disc which is unplayable in this DVD/VCR.

5 Press PLAY or OPEN/CLOSE on the unit.

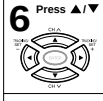
OPEN/CLOSE

The disc tray closes automatically. On the TV-screen, ⏏ changes to "Reading" and then playback commences.

- A menu screen will appear on the TV screen, if the disc has a menu feature.



6 Press ▲/▼ or ◀/▶ to select title.



7 Press ENTER.

- Title is selected and play commences.

8 Press STOP to end playback.

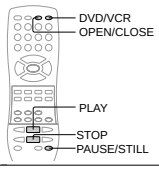
STOP

- The unit records the stopped point, depending on the disc. "▶" appears on the screen. Press **PLAY** to resume playback (from the scene point).
- If you press **STOP** again or unload the disc ("■" appears on the screen.), the unit will clear the stopped point.

■ To start playback in the stop mode

Press **PLAY**.

PLAY



■ To obtain a higher quality picture

Occasionally, some picture noise not usually visible during a normal broadcast may appear on the TV screen while playing a DVD video disc because the high resolution pictures on these discs include a lot of information. While the amount of noise depends on the TV you use with this DVD/VCR, you should generally reduce the sharpness adjustment on your TV when viewing DVD video discs.

■ About DVD VCR CD

The DVD VCR CD icons on the heading bar show the playable discs for the function described under that heading.
- DVD : You can use this function with DVD video discs.
- VCR : You can use this function with VIDEO CDs.
- CD : You can use this function with audio CDs.

■ To pause playback (still mode)

Press **PAUSE/STILL** during playback.

PAUSE/STILL

To resume normal playback, press the PLAY button.

- The sound is muted during still mode.

■ To stop playback

Press **STOP**.

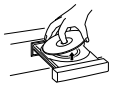
STOP

■ To remove the disc

Press **OPEN/CLOSE**.

OPEN/CLOSE

Remove the disc after the disc tray opens completely.



Be sure to press the OPEN/CLOSE button to close the disc tray after you remove the disc.

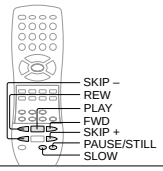
■ Playing a Disc while the VCR section is recording or standing by for timer recording

1) Start to record.
Follow step 1–5 on page 34.
• If the DVD/VCR is standing by for recording, turn on the DVD/VCR.
2) Press DVD/VCR to select DVD mode. The DVD indicator will light.
3) Play a disc.
Follow step 3 ~ step 5 on page 42.
• Press PLAY if the DVD/VCR does not start to play a disc automatically.
4) Stop to play
Press STOP to stop play back a disc.

Notes:
- If a non-compatible disc is loaded, "Incorrect Disc", "Region Code Error" or "Parental Error" will appear on the TV screen according to the type of loaded disc. In this case, check your disc again (See pages 8 and 56).
- Some discs may take a minute or so to start playback.
- When you set a single-faced disc label downwards (ie. the wrong way up) and press the PLAY button or the OPEN/CLOSE button on the unit, "Reading" will appear on the display for 10 seconds and then "Incorrect Disc" will continue to be displayed.
- Some playback operations of DVDs may be intentionally fixed by software producers. Since this unit plays DVDs according to the disc contents the software producers designed, some playback features may not be available. Also refer to the instructions supplied with the DVDs.
- When playing DTS-encoded Audio CDs, excessive noise will be heard from the analogue stereo outputs. To avoid possible damage to the audio system, the consumer should take proper precautions when the analogue stereo outputs of the DVD player are connected to an amplification system.
- Do not move the DVD/VCR during playback. Doing so may damage the disc.
- Use the OPEN/CLOSE button to open and close the disc tray. Do not push the disc tray while it is moving. Doing so may cause the DVD/VCR to malfunction.
- Do not push up on the disc tray or put any objects other than discs on the disc tray. Doing so may cause the DVD/VCR to malfunction.
- In many instances, a menu screen will appear after playback of a movie is completed. Prolonged display of an on-screen menu may damage your television set, permanently etching that image onto its screen. To avoid this, be sure to press the STOP button on your remote control once the movie is completed.
- During the DVD playback if you change the operating mode from DVD to VCR, the DVD will continue to play back the disc and stop after about 5 minutes.
- There may be a slight delay between you pressing the button and the function activating.
- The unit is capable of holding a still video image or On screen display image on your television screen indefinitely. If you leave the still video image or On screen display image displayed on your TV for an extended period of time, you risk permanent damage to your television screen. Projection televisions are very susceptible.

Playing a disc (continued)

You can play discs at various speeds.



Playing in fast reverse or fast forward directions

Press REW or FWD during playback.

REW FWD

REW: Fast reverse playback
FWD: Fast forward playback

Each time you press the REW or FWD button, the playback speed changes.

■ **To resume normal playback**
Press **PLAY**.

PLAY

Notes:
- The DVD/VCR mutes sound and subtitles during reverse and forward scan of DVD video discs. However, the DVD/VCR plays sound during fast forward or fast reverse play of audio CDs.
- The playback speed may differ depending on the disc.

Playing frame by frame

Press PAUSE/STILL during still playback.

PAUSE/STILL

Each time you press the PAUSE/STILL button, the picture advances one frame.

■ **To resume normal playback**
Press **PLAY**.

PLAY

Note:
The sound is muted during frame by frame playback.

Playing in slow-motion

Press SLOW during playback.

SLOW

Each time you press the SLOW button, the slow-motion speed changes.

■ **To resume normal playback**
Press **PLAY**.

PLAY

Note:
The sound is muted during slow-motion playback.

Locating a chapter or track

Press SKIP(►►I) Forward or SKIP(I◄◄) Reverse during playback to locate a chapter that you want to watch.

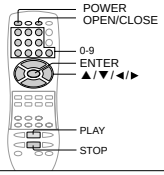
SKIP(INDEX) +
SKIP(INDEX) –

Each time you press the button, a chapter or track is skipped.

Note:
The unit is capable of holding a still video image or On screen display image on your television screen indefinitely. If you leave the still video image or On screen display image displayed on your TV for an extended period of time, you risk permanent damage to your television screen. Projection televisions are very susceptible.

MP3 playback

This player can play back the MP3-data which has been recorded on CD-R or CD-RW. To produce the MP3-data, you need a Windows-PC with CD-ROM drive and a MP3-encoding Software (not supplied).
The Apple-HFS-System can not be played.



MP3 Playback

1 Press **OPEN/CLOSE**.

OPEN/CLOSE

The disc tray will open.
Place a disc onto the tray.

2 Press **PLAY** or **OPEN/CLOSE**.

PLAY

The disc tray closes automatically.
On the TV-screen,"Reading" and then reading file number will appear.

OPEN/CLOSE

Reading will take as much time as the number of file.

3 A MP3 menu screen will appear on the TV screen.

Press ◄/► or **ENTER** to select folder.

4 Press ▲/▼ or ◄/► or **Number keys** to select the desired track, then press **ENTER**.
Track is selected and play commences.

- In case the folder includes more than 11 tracks, press ◄ or ► to display next track list.

5 Press **STOP** to end playback.

PLAY

- The unit records the stopped point. "▶▌" appears on the screen. Press PLAY to resume playback (from the scene point).

STOP

- If you press STOP again or unload the disc, the unit will clear the stopped point.

6 Then press **OPEN/CLOSE**.

OPEN/CLOSE

The disc tray opens.
Remove the disc and press **POWER**.
The disc tray closes automatically and DVD/VCR turns off.

Notes:
- During MP3-Playback, you can not use SEARCH, A-B Repeat functions.
- You can use Repeat (Track, All or Folder), Random functions and Program playback for MP3 CD Playback. (See page 48 and 49)

MP3 CD Information

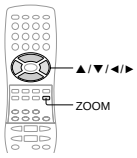
Limitations on MP3 CD playback
- MP3 CD is the disc that is standardized by ISO9660, its file name must include 3-digits extension letters, "mp3".
- The directory and file names of the MP3 CD must be correspond to the ISO standardized files.
- This unit can read 200 files per disc. If one directory has more than 200 files, it reads up to 200 files, the remaining files will be omitted.
- As for multi-session disc, only the first session can be played.
- If the CD has both audio tracks and MP3 files, only audio tracks are played.
- It may take more than one minute for this unit to read MP3 files depending on its structure.
- Music recorded by "Joliet Recording Specification" can be played back, the file name is displayed (within 17 letters) on the screen Long file names will be condensed.
- The music files recorded by "Hierarchical File System" (HFS) cannot be played.

Limitations on display
- The maximum number for display is 17 letters. Available letters for display are the following: capital or small alphabets of A through Z, numbers of 0 through 9, and _ (under score).
- Other letters than those above are replaced in hyphen.

Notes on MP3 files
To play back MP3 CD in the recorded order,
1. Use MP3 software that records data alphabetically or numerically.
2. Name each file including two-digit or three-digit number (e.g. "01" "02" or "001" "002").
3. Refrain from making too many sub-folders.

CAUTION:
- Some MP3 CDs can not be played back depending on the recording conditions.
- The CD-R/RW that has no music data or non-MP3 files can not be played back.

Zooming



Zooming

This unit will allow you to zoom in on the frame image. You can then make selections by switching the position of the frame.

1 **Press ZOOM during playback.**

ZOOM CM SKIP

The centre part of the image will be zoomed in.
Each press of **ZOOM** will change the ZOOM 🔍1 (x 1.3), 🔍2 (x 1.5) and 🔍3 (x 2.0).

Q1

2 **Press ▲ / ▼/◄/► to view a different part of the frame.**

You may move the frame from the centre position to UP, DOWN, LEFT or RIGHT direction.

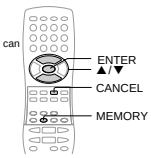
3 **In the zoom mode press ZOOM repeatedly to return to a 1:1 view (🔍 Off).**

ZOOM CM SKIP

Notes:
- You can select the Pause, Slow or Search playback in the zoom mode.
- Some discs may not respond to zoom feature.

Marking desired scenes

The unit stores the points that you want to watch again up to 3 points. You can resume playback from each scene.



Marking the Scenes

1 Press **MEMORY** during playback.

MEMORY ZERO RETURN

2 Select the blank Marker using ▲/▼.
Then press **ENTER** at the desired scene.

- Repeat this procedure to set the other 2 scenes.

3 Press **MEMORY** to remove this display.

MEMORY ZERO RETURN

Returning to the Scenes

1 Press **MEMORY** during playback or stop mode.

MEMORY ZERO RETURN

2 Press ▲/▼ to select the Marker 1-3.

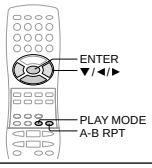
3 Press **ENTER**.

Playback starts from the marked scene.

■ **To cancel the Marker**
Follow the above steps 1~2, then press **CANCEL**.

Notes:
- Some discs may not work with the marking operation.
- The marking is canceled when you open the disc tray or turn the power off.
- Some subtitles recorded around the marker may fail to appear.
- While the MARKER screen is displayed, if you do a special playback as the Fast Forward/Review Playback or SKIP, the MARKER screen will disappear. Press **MEMORY** again as soon as you find the desired scene.

Repeat playback



Title, Chapter, Track Playback

1 **Press PLAY MODE during playback or stop mode.**

PLAY MODE SP/SLP

2 **DVD**
Press ◄/► or ENTER once or twice to select "Chapter" or "Title".

CD/VCD
Press ▼ to select "Repeat".
Press ◄/► or ENTER once or twice to select "Track" or "All".

You can also select "Folder" when playing MP3 encoded CD's.

3 **Press PLAY MODE again to make the screen disappear.**
Press PLAY to start Repeat playback.
To resume normal playback, select Repeat "Off".

Note:
Some discs may not work with the repeat operation.

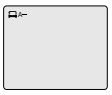
A-B Repeat Playback

A-B repeat playback allows you to repeat material between two selected points.

1 **Press REPEAT A-B during playback.**

A-B RPT

The start point is selected.



2 **Press A-B RPT again.**

A-B RPT

The end point is selected. Playback starts at the point that you selected. Playback stops at the end point, returns to Point A automatically, then starts again.

■ **To resume normal playback**
Press **A-B RPT** again.

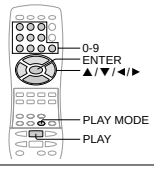
A-B RPT

"Off" appears on the screen.

Notes:
- In A-B repeat mode, subtitles near point A or B may not appear.
- During the A-B Repeat Playback the ANGLE feature will not operate.
- You may not be able to set A-B Repeat, depending on the scenes of the DVD.
- A-B repeat does not work with an interactive DVD.

Program playback/Random playback

You can arrange the order of tracks on the disc.

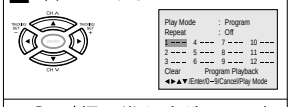


Program Playback

1 **Press PLAY MODE in the stop mode.**

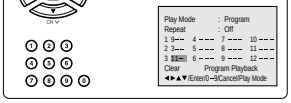
PLAY MODE SP/SLP

2 **Press ▲/▼ to select Play Mode, then press ◄/► to select program.**



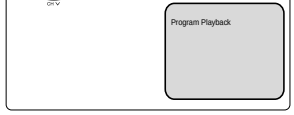
3 **Press ▲/▼ or ◄/► to select the programming position. Use Numbered buttons (0-9) to input the Track numbers.**

- To program others, repeat Step 3.
- If you input a wrong number, press **CANCEL**.



4 **Press ▲/▼ or ◄/► to select "Program Playback" and press ENTER.**

The programmes you selected will start to playback in the order.
To return to normal playback, select Play Mode: "Off".



■ **To cancel program play**
Select "Clear" and press **ENTER**.

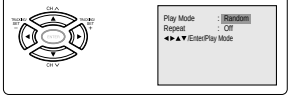
- The program is cancelled when you open the disc tray or turn the power off.

Random Playback

1 **Press PLAY MODE in the stop mode.**

PLAY MODE SP/SLP

2 **Press ▲/▼ to select Play Mode, then press ◄/► to select "Random".**

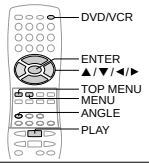


3 **Press PLAY.**

PLAY

The Random Playback will start.

Changing angles/Title selection/DVD menu



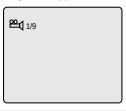
Changing Angles

When playing back a disc recorded with multi-angle facility, you can change the angle that you are viewing the scene from.

1 **Press ANGLE during playback.**

ANGLE COUNTER RESET

The current angle will appear.



2 **Press ANGLE repeatedly until the desired angle is selected.**

ANGLE COUNTER RESET

Note:
Depending on the DVD, you may not be able to change the angles even if multi-angles are recorded on the DVD.

Title Selection

Two or more titles are recorded on some discs. If the title menu is recorded on the disc, you can select the desired title.

1 **Press TOP MENU during playback.**

TOP MENU

Title menu appears on the screen.

2 **Press ▲/▼ or ◄/► to select the desired title.**

3 **Press ENTER or PLAY.**

The playback of the selected title will start.

PLAY

Note:
Depending on the DVD, you may not be able to select the title.
Depending on the DVD, a "title menu" may simply be called a "menu" or "title" in the instructions supplied with the disc.

DVD Menu

Some DVDs allow you to select the disc contents using the menu.
When you play back these DVDs, you can select the subtitle language and sound-track language,etc. using the menu.

1 **Press MENU during playback.**

MENU

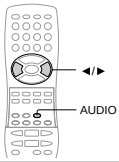
The DVD menu appears on the screen.
- Press **MENU** again to resume playback at the scene when you pressed **MENU**.

2 **Press ▲/▼ or ◄/► to select the desired item.**

3 **Press ENTER.**

The menu continues to another screen. Repeat steps **2** and **3** to set the item completely.

Changing soundtrack language/ Setting surround sound



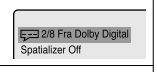
Changing soundtrack language

You can select the language when you play a multilingual disc.

1 **Press AUDIO during playback.**

AUDIO AUDIO SELECT

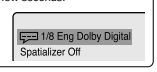
The current soundtrack language will appear.



2 **Press AUDIO repeatedly until the desired language is selected.**

AUDIO AUDIO SELECT

The on-screen display will disappear after a few seconds.



■ **In case of VIDEO CD playback**
Audio type changes as follows each time you press **AUDIO**.

Notes:
- If the desired language is not heard after pressing the button several times, the language is not recorded on the disc.
- Changing soundtrack language is cancelled when you open the disc tray or turn the power off. The initial default language or available language will be heard if the disc is played back again.
- If desired language is not selected after pressing the button several times, the language is not recorded on the disc.

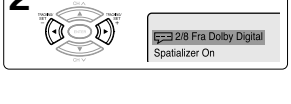
Setting surround sound

This DVD/VCR equipped with a "SPATIALIZER VIRTUAL SURROUND". It can produce the effect of being in a cinema or a concert hall.

1 **During disc playback press AUDIO.**

AUDIO AUDIO SELECT

2 **Press ◄ or ► to select "On".**

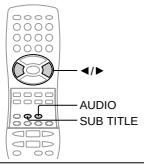


■ **To cancel Surround mode**:
Follow the left steps **1**–**2**, then press ◄ or ► to select the "Off" position.

Notes:
- If the selected language is not recorded on the disc, the original language will be heard.
- The "SPATIALIZER VIRTUAL SURROUND" is effective only for the sound of disc.

Spatializer® 3-Dimensional Sound Processing provided by Desper Products. Inc.
Certain audio features of this product manufactured under a license from Desper Products, Inc., Spatializer® and the circle-in-square device are trademarks owned by Desper Products, Inc.

Subtitles/Karaoke playback



Turning the subtitles on and off

When playing back a disc recorded with subtitles, you can turn the subtitles on or off.

Press SUB TITLE during playback until "Off" appears.

SUB TITLE
ATR

Note:
Depending on the DVD, you may not be able to turn the subtitles on even if they are recorded on it.
Depending on the DVD, you may not be able to turn the subtitles off.

Changing the subtitle language

You can select the language when playing back a disc recorded with multi-lingual subtitles.

1 **Press SUBTITLE repeatedly during playback until your desired language appears.**

SUB TITLE
ATR

2 **The on-screen display will disappear after a few seconds.**

Notes:
- Changing subtitle language is cancelled when you open the disc tray or turn the power off.
- Depending on the DVD, you may not be able to change the subtitles even if multilingual subtitles are recorded on it. While playing the DVD, the subtitle may change when: -you open or close the disc tray -you change the title.
- In some cases, the subtitle language is not changed to the selected one immediately.

Karaoke playback

You can turn the vocal on or off recorded on the DVD KARAOKE.

1 **During DVD KARAOKE disc playback, press AUDIO.**

AUDIO
AUDIO SELECT

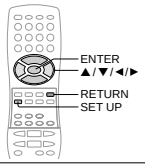
2 **Press ◄ or ► to select "On".**

Off : The primary vocal is not output.
On : The primary vocal is output when it is recorded on the disc.

Notes:
- The vocal output feature is used during playback of Dolby Digital (multi-channel) recorded DVD KARAOKE discs. This feature allows you to turn off vocal audio tracks, or restore them for background accompaniment.
- When playing KARAOKE, connect appropriate audio equipment such as an amplifier to the DVD/VCR.

Setting the aspect ratio of TV screen

You can select the aspect ratio for your TV.
The following pages describe the setup/operation in DVD mode.

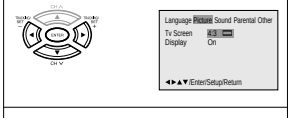


Setting the aspect ratio of TV screen

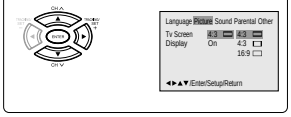
1 **Press SET UP in the stop mode or No Disc.**
Press ◄ or ► to select "Picture".

SET UP
VCR MENU

2 **Press ▼ or ENTER, then press ▲ or ▼ to select "Tv Screen".**



3 **Press ► or ENTER.**
Press ▲ or ▼ to select your desired screen type, then press ENTER.



You have the following screen sizes to choose from:

4:3 Normal TV
Select this mode when connecting to a conventional TV. When playing back a wide screen-DVD disc, it displays the wide picture with black bands at the top and bottom of screen.

4:3 PAN SCAN
It displays the wide picture on the whole screen with left and right edges automatically cut off.

16:9 WIDE SCREEN
Select this mode when connecting to a wide-screen TV. A wide screen picture is displayed full size.

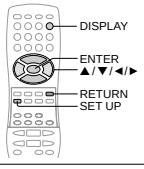
4 **To make SETUP screen disappear, press SET UP or RETURN while the SETUP screen is being displayed.**

SET UP
VCR MENU

RETURN

Note:
If the DVD disc is not formatted in the pan & scan style, it displays 4:3 style.

Setting on screen display/Status display of disc

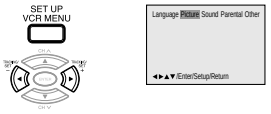


Setting on screen display

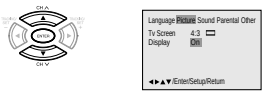
On screen display can be switched on or off when you press the buttons.

1 **Press SET UP in the stop mode or No Disc.**
Press ◄ or ► to select "Picture".

SET UP
VCR MENU

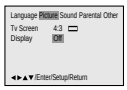


2 **Press ▼ or ENTER, then press ▲ or ▼ to select "Display".**



3 **Press ◄/► or ENTER to select "On" or "Off".**

ON: On screen displays appear when you press the buttons (factory setting).
OFF: On screen displays do not appear when you press any buttons.



4 **To make SETUP screen disappear, press SET UP or RETURN while the SETUP screen is being displayed.**

SET UP
VCR MENU

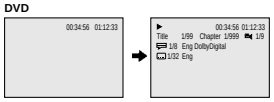
RETURN

Status display of disc

DVD VCD CD

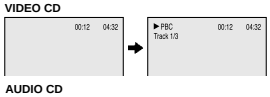
Each Press of DISPLAY, the status display of the disc will appear on the screen and change as follows.

DVD



To make status display disappear, press **DISPLAY** again.

VIDEO CD

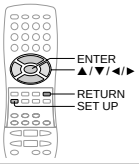


AUDIO CD

When you playback the CD disc, the status display will appear on the screen and continue displaying.

Dynamic Range Control

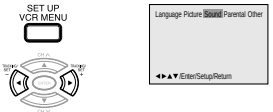
DRC (Dynamic Range Control) enables you to control the dynamic range so as to achieve a suitable sound for your equipment.



Dynamic Range Control

1 **Press SET UP in the stop mode.**
Press ◄ or ► to select "Sound".

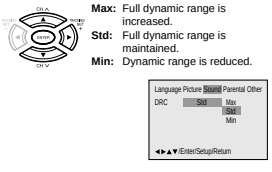
SET UP
VCR MENU



2 **Press ▼ or ENTER to select "DRC".**

3 **Press ► or ENTER, then press ▲ or ▼ to select desired setting.**

Max: Full dynamic range is increased.
Std: Full dynamic range is maintained.
Min: Dynamic range is reduced.



4 **To make SETUP screen disappear, press SET UP or RETURN while the SETUP screen is being displayed.**

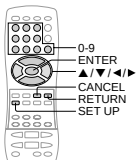
SET UP
VCR MENU

RETURN

Notes:
- This function works only during playback of Dolby Digital recorded discs.
- The level of Dynamic Range Reduction may differ depending on DVD video disc.

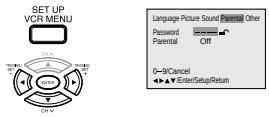
Parental control setting

Some discs are specified not suitable for children. Such discs can be limited not to play back with the unit.



DVD Parental control setting

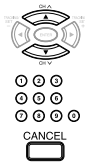
1 **Press SET UP in the stop mode or No Disc. Press ◄ or ► to select "Parental". Then press ▼ or ENTER.**



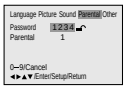
2 **Press ▲ or ▼ to select "Parental", then press ◄ or ► until the level you require appears.**

- **Level Off** : The parental control setting does not function.
- **Level 8** : All DVD software can be played back.
- **Level 1** : DVD software for adults cannot be played back.
- Select from the level 1 to level 8. The limitation will be more severe as the level number is lower.

3 **Press ▲ or ▼ to select "Password".**
Press number buttons (0-9) to input a 4-digit password.

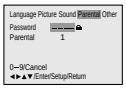


Be sure to remember this number!
- If you input a wrong number, press **CANCEL**.



4 **Press ENTER to store the password.**

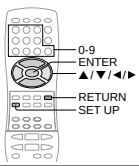
Note: Now the rating is locked and the setting cannot be changed unless you enter the correct password.



5 **Press SET UP or RETURN to remove the parental control screen.**

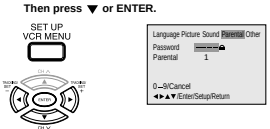
Notes:
- **If each setup (P. 53–62) has been completed, the unit can always be worked under the same conditions (especially with DVD discs). Each setup will be retained in the memory if you turn the power off.**
- Depending on the discs, the unit cannot limit playback.
- Some discs may not be encoded with specific rating level information though its disc jacket says "adult." For those discs, the age restriction will not work.

To change the parental level

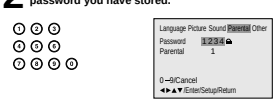


DVD To change the parental level

1 **Press SET UP in the stop mode or No Disc. Press ◄ or ► to select "Parental". Then press ▼ or ENTER.**

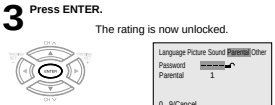


2 **Press number buttons (0-9) to enter the password you have stored.**

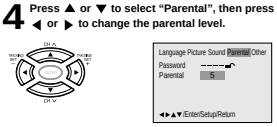


3 **Press ENTER.**

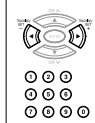
The rating is now unlocked.



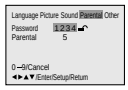
4 **Press ▲ or ▼ to select "Parental", then press ◄ or ► to change the parental level.**



5 **Press ▲ or ▼ to select "Password", then press number buttons (0-9) to enter the password.**

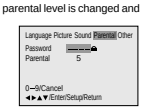


Note: You can change the password if you want.



6 **Press ENTER.**

Now the parental level is changed and locked.

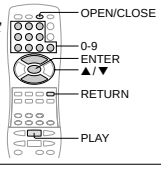


7 **Press SET UP or RETURN to remove the parental control screen.**

Note:
Do not forget the password. If you forget the password, contact the dealer that you purchased the unit from.

Temporary disabling of rating level by DVD disc

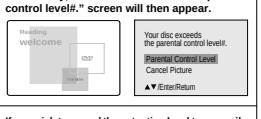
Depending on the DVD disc, the disc may try to temporarily cancel the rating level that you have set.
It is up to you to decide whether to cancel the rating level or not.



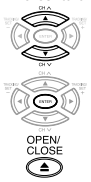
DVD Temporary disabling of rating level by DVD disc

1 **Load a DVD disc and press PLAY or OPEN/CLOSE on the unit (see P. 42).**

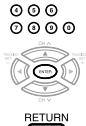
2 **If the DVD disc has been designed to temporarily cancel the Rating level, the screen which follows the "Reading" screen will change, depending on which disc is played. If you select "YES" with the ENTER key, "Your disc exceeds The parental control level#." screen will then appear.**



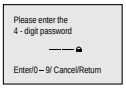
3 **If you wish to cancel the set rating level temporarily, select "Parental Control Level" with ▲ or ▼, then press ENTER. If the 4-digit password at step 3 on P.56 has been set, the password entering screen will appear as shown in step 4 below. Alternatively, if the password has not been set, playback will commence. If you don't know (or have forgotten) the password, select "Cancel Picture". The setting screen will disappear. Press OPEN/CLOSE to remove the disc.**



4 **Enter the password with number buttons (0-9). Then press ENTER.**



If you interrupt the entering, press **RETURN**.

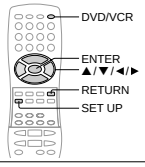


5 **Playback will commence if the entered password was correct.**

Note:
This temporary cancellation of rating level will be kept until the disc is ejected.
When the disc is ejected, the original rating level will be set again automatically.

Setting setup language

The setup language can be selected.

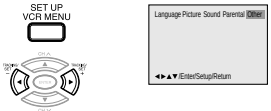


DVD MP3 CD Setting setup language

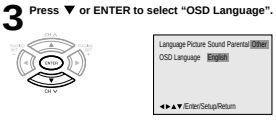
1 **Press DVD/VCR to select the DVD mode.**

"Reading" changes to "No Disc".
(If DVD disc has already loaded, the playback will start automatically.)

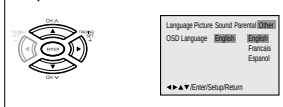
2 **Press SET UP in the stop mode. Press ◄ or ► to select "Other".**



3 **Press ▼ or ENTER to select "OSD Language".**



4 **Press ► or ENTER and then press ▲ or ▼ to select desired language (e.g. English), then press ENTER.**

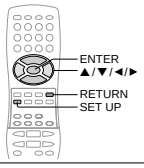


5 **To make SETUP screen disappear, press SET UP or RETURN while the SETUP screen is being displayed.**

If the unit does not operate properly: Static electricity, etc., may affect the player's operation. Disconnect the AC power cord once, then connect it again.

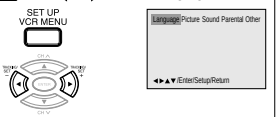
Setting menu language

You can select the language of the disc menu messages of DVDs.



Setting menu language

1 **Press SET UP in the stop mode or No Disc.**
Press ◄ or ► to select "Language".

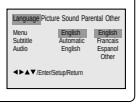


2 **Press ▼ or ENTER, then press ▲ or ▼ to select "Menu".**

3 **Press ► or ENTER.**
Press ▲ or ▼ to select your desired language, then press ENTER.

English, Francais, Espanol
The selected language is the first-priority Menu language.

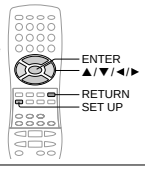
Other: Other language can be selected (See the Language code list on page 63).



4 **To make SETUP screen disappear, press SET UP or RETURN while the SETUP screen is being displayed.**

Changing subtitle language

The same subtitle language can always be selected even if you replace the disc or turn the power off.



Changing subtitle language

1 **Press SET UP in the stop mode or No Disc.**
Press ◄ or ► to select "Language".

2 **Press ▼ or ENTER, then press ▲ or ▼ to select "Subtitle".**

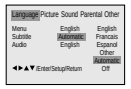
3 **Press ► or ENTER.**
Press ▲ or ▼ to select your desired language, then press ENTER.

English, Francais, Espanol
The subtitle is displayed with the selected language if it is recorded on the disc.

Other:
If you want to select another language, enter the language code (see the language code list on page 63).

Automatic:
- The unit will automatically select the same language in the AUDIO setting.
- When the unit selects the same language as the AUDIO, the subtitles will not appear during playback.
- When you do not use the same language as the AUDIO, the subtitles will appear during playback.

Off:
Subtitles do not appear.

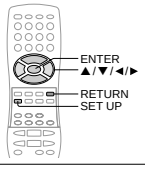


4 **To make SETUP screen disappear, press SET UP or RETURN while the SETUP screen is being displayed.**

Note:
If the selected language is not recorded on the disc, the first-priority language is selected.

Setting audio soundtrack language

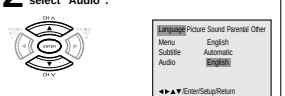
The same audio soundtrack language can always be selected by your unit even if you replace the disc or turn the power off.



Setting audio soundtrack language

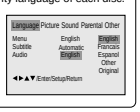
1 **Press SET UP in the stop mode or No Disc.**
Press ◄ or ► to select "Language".

2 **Press ▼ or ENTER, then press ▲ or ▼ to select "Audio".**



3 **Press ► or ENTER.**
Press ▲ or ▼ to select your desired Audio Language, then press ENTER.

- **English, Francais, Espanol:** The language you have selected will play if it is recorded on the disc.
- **Other:** If you want to select another language, enter the language code (See the Language code list on page 63).
- **Original:** The unit will select the first priority language of each disc.



4 **To make SETUP screen disappear, press SET UP or RETURN while the SETUP screen is being displayed.**

Note:
If the selected language is not recorded on the disc, the original language will be heard.

Language code list

Enter the appropriate code number for the initial settings "AUDIO", "SUBTITLE" and/or "MENU LANGUAGE" (see pages 60-62).

Language code list

Language Name	Code	Language Name	Code	Language Name	Code	Language Name	Code
Abkhazian	1112	Fiji	1620	Lingala	2224	Singhalese	2919
Afar	1111	Finnish	1619	Lithuanian	2230	Slovak	2921
Afrikaans	1116	French	1628	Macedonian	2321	Slovenian	2922
Albanian	2927	Frisian	1635	Malagasy	2317	Somali	2925
Amharic	1123	Galician	1722	Malay	2329	Spanish	1529
Arabic	1128	Georgian	2111	Malayalam	2322	Sundanese	2931
Armenian	1835	German	1415	Maltese	2330	Swahili	2933
Assamese	1129	Greek	1522	Maori	2319	Swedish	2932
Aymara	1135	Greenlandic	2122	Marathi	2328	Tagalog	3022
Azerbaijani	1136	Guarani	1724	Moldavian	2325	Tajik	3017
Bashkir	1211	Gujarati	1731	Mongolian	2324	Tamil	3011
Basque	1531	Hausa	1811	Nauru	2411	Tatar	3030
Bengali; Bangla	1224	Hebrew	1933	Nepali	2415	Telugu	3015
Bhutani	1436	Hindi	1819	Norwegian	2425	Thai	3018
Bihari	1218	Hungarian	1831	Oriya	2528	Tibetan	1225
Breton	1228	Icelandic	1929	Panjabi	2611	Tigrinya	3019
Bulgarian	1217	Indonesian	1924	Pashto, Pushto	2629	Tonga	3025
Burmese	2335	Interlingua	1911	Persian	1611	Turkish	3028
Byelorussian	1215	Irish	1711	Polish	2622	Turkmen	3021
Cambodian	2123	Italian	1930	Portuguese	2630	Twi	3033
Catalan	1311	Japanese	2011	Quechua	2731	Ukrainian	3121
Chinese	3618	Javanese	2033	Rhaeto-Romance	2823	Urdu	3128
Corsican	1325	Kannada	2124	Romanian	2825	Uzbek	3136
Croatian	1828	Kashmiri	2129	Russian	2831	Vietnamese	3219
Czech	1329	Kazakh	2121	Samoan	2923	Volapük	3225
Danish	1411	Kirghiz	2135	Sanskrit	2911	Welsh	1335
Dutch	2422	Korean	2125	Scots Gaelic	1714	Wolof	3325
English	1524	Kurdish	2131	Serbian	2928	Xhosa	3418
Esperanto	1525	Laothian	2225	Serbo-Croatian	2918	Yiddish	2019
Estonian	1530	Latin	2211	Shona	2924	Yoruba	3525
Faroese	1625	Latvian, Lettish	2232	Sindhi	2914	Zulu	3631

Before calling service personnel

Check the following guide for the possible cause of a problem before contacting service.

Symptoms and correction

SYMPTOMS	POSSIBLE SOLUTIONS	PAGE
DVD/VCR		
DVD/VCR does not operate.	• Make sure the power cord is plugged in. • Try another AC outlet. • Power is off, check fuse or circuit breaker. • Unplug unit, then plug it back in. • Select the DVD or VCR mode before operating.	5 – – 5 30,42
No picture.	• Antenna connection is not correct or antenna cable is disconnected. • The video channel is not in the correct position or the TV is not set to the video channel 3 or 4. • Check the unit is connected correctly. • The video input selector of the TV is not set to VIDEO. Set to VIDEO (or equivalent). • Channel is set to the external mode.	14~17 22 14~19 – –
No sound.	• Check the unit is connected correctly. • Check the input selector of the amplifier is set properly. • The unit is in the Special playback mode.	14~19 – 31,34
The remote control does not function.	• Aim at the remote control at the remote sensor. • Operate within Approx. 7 Meters or reduce the light in the room. • Clear the path of the beam. • The batteries are weak. Replace the batteries. • Check the batteries are inserted correctly.	13
No CATV reception	• Check all CATV connections. • Station or CATV system problems, try another station.	16,17
VCR		
TV recording does not work.	• The erase prevention tab of the video cassette is broken off. • The unit is in the external input mode.	29,34
Timer recording does not work.	• The time is not set correctly. • The recording start/end time is not set correctly. • The TIMER has not been pressed (⏲ is not lit).	24 37 37
Noise bars on screen.	• Tracking adjustment beyond range of automatic tracking circuit. Try Manual tracking adjustment. • Video heads are dirty. • The tape is worn or damaged.	31 31 –
DVD		
Display is not shown in your language.	• Select proper language in the menu options.	59
Playback doesn't start.	• No disc is inserted. • The disc may be dirty. Clean up the disc. • The unit cannot play DVD-ROMs, etc.	42 42 42
Stopping playback, slow-motion play, repeat play, or memory play, etc. cannot be performed.	• Some discs may not do some of the functions.	–
No 4:3 (16:9) picture	• The setup does not match your TV.	53
No on-screen display	• Select Display On.	54
No surround sound	• The setup does not match your stereo system.	20
The unit or remote operation key is not functioning.	• Turn off the unit and unplug the AC power cord for several minutes, then replug it.	–
Playback does not start when the title is selected.	• Check the Parental setup.	56,57
Audio soundtrack and/or subtitle language is not changed when you play back a DVD.	• Multilingual language is not recorded on the DVD disc.	61,62
No subtitle	• Some discs have no subtitles. • Subtitles are cleared. Press SUB TITLE.	51
Angle cannot be changed.	• Multi-angles are not recorded on the DVD disc.	50
✋ appears on the screen.	• The function is prohibited with the unit or the disc.	–

Specifications

General / input / output / supplied accessories

GENERAL

Power supply	AC 120V 60Hz
Power consumption	Operation: 20W, Stand by: 4W
Weight	9.9lbs (4.5 kg)
Dimensions	Width : 16-15/16 inches (430 mm) Height : 3-7/8 inches (99 mm) Depth : 12-3/8 inches (314.5 mm)
Tuner	181 channel freq. synthesized VHF 2-13 UHF 14-69 CATV 125 Channels
Antenna input/output	UHF/VHF In/Out : 75 ohm coaxial
RF channel output	Channel 3 or 4, Switchable
Color system	NTSC
Video head	4 Rotary heads
Audio track	Hi-Fi sound - 2 Tracks / MONO sound - 1 Track
Hi-Fi frequency response	20Hz to 20,000Hz
Hi-Fi dynamic range	More than 90dB
F.FWD/REW time at 25˚C (77˚F)	Approx. 1minute and 48 seconds (with T-120 Cassette Tape)
Applicable disc	DVD (12cm, 8cm), CD (12cm, 8cm)
Frequency range	DVD linear sound: 48 kHz sampling 4Hz-22kHz 96 kHz sampling 4Hz-44 kHz
S/N ratio	90dB (DVD)
Harmonic distortion	0.008% (DVD)
Wow and flutter	Below measurable level (DVD)
Dynamic range	90dB (DVD)
Operating conditions	Temperature: 5˚C-40˚C (41˚F-104˚F), Operating status: Horizontal

Input/Output

DVD/VCR	
Video input	1.0 V (p-p), 75 Ω, negative sync., pin jack x 2
Video output	1.0 V (p-p), 75 Ω, negative sync., pin jack x 1
Audio input	300mV (rms), 50kΩ. negative sync., pin jack (L/R) x 2
Audio output	300mV (rms), 1kΩ. negative sync., pin jack (L/R) x 1
DVD	
S video output	(Y) 1.0 V (p-p), 75 Ω, negative sync., Mini DIN 4-pin × 1 (C) 0.286 V (p-p), 75 Ω
Component video output	(Y) 1.0 V (p-p), 75 Ω, negative sync., pin jack × 1 (P_R)/(P_B) 0.7 V (p-p), 75 Ω, pin jack × 2
Audio output (BITSTREAM/PCM COAXIAL)	0.5V (p-p), 75 Ω, pin jack × 1
Audio output (BITSTREAM/PCM OPTICAL)	Optical connector × 1
Audio output (ANALOG)	2.0 V (rms), 220 Ω, pin jacks (L, R) × 1

Supplied accessories

Audio/video cable 1
Remote control (SE-R0066) 1
Batteries (AAA) 2
75 ohm coaxial cable 1

• Designs and specifications are subject to change without notice.

LIMITED WARRANTY DVD VIDEO PLAYER

Toshiba America Consumer Products, Inc. ("TACP"), Toshiba Hawaii ("THI") and Toshiba Canada Limited ("TCL") make the following limited warranties. These limited warranties extend to original purchaser or any person receiving this set as a gift from the original purchaser and to no other purchaser or transferee.

Limited Ninety (90) Day Warranty
TACP/THI warrant this product against defects in materials or workmanship for a period of ninety (90) days after the date of original retail purchase. During this period, TACP/THI will repair or replace a defective product or part, at their option, with a new or refurbished product or part without charge to you. You must deliver the entire product to a TACP/THI Authorized Service Station. You are responsible for all transportation and insurance charges for the unit to and from the Authorized Service Station. If you live in the U.S.A. you may, at your option, return your DVD Unit to:

Toshiba America Consumer Products Inc.
Returns Center
1420C Toshiba Dr.
Lebanon, TN 37087

Upon receipt we will, at our option, exchange the DVD Unit with a new or refurbished unit. **Canadian consumers are requested to contact TCL. In Hawaii consumers are requested to contact THI.**

Limited One (1) Year Warranty
TACP/THI further warrant the parts in this product against defects in materials or workmanship for a period of one (1) year after the date of original retail purchase. During this period, TACP/THI will repair or replace a defective product or part, at their option, with a new or refurbished product or part without charge to you, except that if a defective part is replaced after ninety (90) days from the date of the original retail purchase you pay labor charges involved in the replacement. You must also deliver the entire product to a TACP/THI Authorized Service Station. You are responsible for all transportation and insurance charges for the unit to and from the Authorized Service Station. If you live in the U.S.A. you may, at your option, return your DVD Unit to:

Toshiba America Consumer Products Inc.
Returns Center
1420C Toshiba Dr.
Lebanon, TN 37087

Upon receipt we will, at our option, exchange the DVD Unit with a new or refurbished unit. **Canadian Consumers are requested to contact TCL. In Hawaii consumers are requested to contact THI.**

Rental Units
The warranty for rental units begin with the first rental or thirty (30) days from the date of shipment to the rental firm, whichever comes first.

Commercial Units
Products sold and used for commercial use have a limited ninety (90) day warranty for all parts and labor.

Owner's Manual
You should read the owner's manual thoroughly before operating this product. You should complete and mail the enclosed Demographic card within ten (10) days after you, or the person who has given you this product as a gift, purchased this product. This is one way to enable TACP to provide you with better customer service and improved products. Failure to return the card will not affect your rights under this warranty.

Your Responsibility
The above warranties are subject to the following conditions:

(1) You must retain your bill of sale or provide other proof of purchase.
(2) You must notify a TACP/THI/TCL /Authorized Service Station within thirty (30) days after you discover a defective product or part.
(3) All warranty servicing of this product must be made by a TACP/THI/TCL Authorized Service Station.
(4) U.S.A. warranties are effective only if the product is purchased and operated in the Continental U.S.A. or Puerto Rico.
(5) Labor service charges for set installation. Set up, adjustment of customer controls and installation or repair of antenna systems are not covered by this warranty. Reception problems caused by inadequate antenna systems are your responsibility.
(6) Warranties extend only to defects in materials or workmanship as limited above and do not extend to any product or parts which have been lost or discarded by you or to damage to products or parts caused by misuse, accident, damage caused by Acts of God, such as lighting or fluctuations in electric power, improper installation, improper maintenance or use in violation of instructions furnished by us; or to units which have been altered or modified without authorization of TACP/THI/TCL or to damage to products or part thereof which have had the serial number removed, altered, defaced or rendered illegible.
(7) Should you elect to return your DVD Unit to TACP after the ninety (90) days and within one (1) year, or after the warranty period has expired: Call (800)-631-3811 to receive information concerning an exchange price. Payment must be enclosed with product in the form of a certified check or money order including reason for return.
(8) Physically damaged DVD Units are not acceptable for repair or exchange whether in or out of warranty and will be returned as received.

(Continued)

LIMITED WARRANTY DVD VIDEO PLAYER (continued)

How to Obtain Warranty Service

(1) Refer to the troubleshooting guide in your owner's manual. This check list may solve your problem.
(2) In the U.S.A., only call the TACP toll free number 800-631-3811, or if in Hawaii or Canada see listing below within (30) days after you find a defective product or part.
(3) Arrange for the delivery of the product to the TACP/THI/TCL Authorized Service Station or TACP Return Center. Products shipped to the Service Station must be insured and safely and securely packed, preferably in the original shipping carton, and a letter explaining the defect and also a copy of the bill of sale or other proof of purchase must be enclosed.

In the Continental United States contact:

In Hawaii contact:
Toshiba Hawaii Inc.
327 Kamakee Street
Honolulu, HA 96814
(808)-521-5377

In Canada contact:
Consumer Electronics Group
191 McNabb Street
Markham, Ontario L3R 8H2
(905)-470-5400

Consumer Electronics Group
22171 Fraserwood Way
Richmond, B.C. V6W 1J5
(604)-303-2500

Consumer Electronics Group
18050 Trans canada
Kirkland, Quebec H9J 4A1
(514)-390-7766

All warranties implied by state law, including the implied warranties of merchantability and fitness for a particular purpose, are expressly limited to the duration of the limited warranties set forth above. With the exception of any warranties implied by state law as hereby limited, the foregoing warranty is exclusive and in lieu of all other warranties, guarantees, agreements and similar obligations of manufacturer or seller with respect to the repair or replacement of any parts. In no event shall TACP/THI be liable for consequential or incidental damages.
No person, agent, distributor, dealer or company is authorized to change, modify or extend the terms of these warranties in any manner whatsoever. The time within which an action must be commenced to enforce any obligation of TACP/THI arising under the warranty or under any statute, or law of the United States or any state thereof, is hereby limited to ninety (90) days from the date you discover or should have discovered, the defect. This limitation does not apply to implied warranties arising under state law.
This warranty gives you specific legal rights and you may also have other rights which may vary from state to state. Some states do not allow limitation on how long an implied warranty lasts, when an action may be brought, or the exclusion or limitation of incidental or consequential damages, so the above provisions may not apply to you.

ATTENTION CANADIAN CONSUMERS:
Canadian consumers are requested to complete the special Canadian "Warranty Registration Form" enclosed, and forward this completed form with a copy of bill of sale to TOSHIBA OF CANADA to "Register and Validate" their warranty. Product must be purchased from an Authorized Canadian Dealer. Products purchased in the U.S.A. and used in Canada are not covered by these warranties.

IMPORTANT: PACKING AND SHIPPING INSTRUCTION
When you send the product to a Service Station, you must use the original carton box and packing material, then insert the original carton box containing the unit into another carton using more packing material.

CAUTION

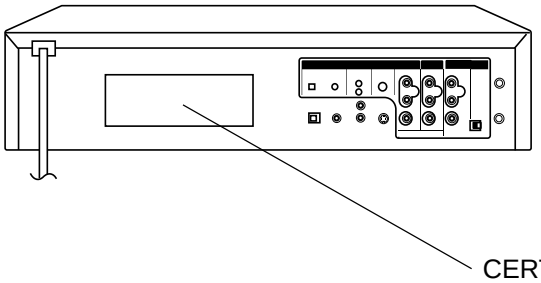
THIS DIGITAL VIDEO PLAYER EMPLOYS A LASER SYSTEM.

TO ENSURE PROPER USE OF THIS PRODUCT, PLEASE READ THIS SERVICE MANUAL CAREFULLY AND RETAIN FOR FUTURE REFERENCE. SHOULD THE UNIT REQUIRE MAINTENANCE, CONTACT AN AUTHORIZED SERVICE LOCATION-SEE SERVICE PROCEDURE.

USE OF CONTROLS, ADJUSTMENTS OR THE PERFORMANCE OF PROCEDURES OTHER THAN THOSE SPECIFIED HEREIN MAY RESULT IN HAZARDOUS RADIATION EXPOSURE.

TO PREVENT DIRECT EXPOSURE TO LASER BEAM, DO NOT TRY TO OPEN THE ENCLOSURE. VISIBLE LASER RADIATION MAY BE PRESENT WHEN THE ENCLOSURE IS OPENED. DO NOT STARE INTO BEAM.

Location of the required Marking
The rating sheet and the safety caution are on the rear of the unit.



CERTIFICATION: COMPLIES WITH FDA
RADIATION PERFORMANCE STANDARDS,
21 CFR SUBCHAPTER J.

IMPORTANT SAFEGUARDS

1. **READ INSTRUCTIONS**
   All the safety and operating instructions should be read before the unit is operated.
2. **RETAIN INSTRUCTIONS**
   The safety and operating instructions should be retained for future reference.
3. **HEED WARNINGS**
   All warnings on the unit and in the operating instructions should be adhered to.
4. **FOLLOW INSTRUCTIONS**
   All operating and use instructions should be followed.
5. **CLEANING**
   Unplug this unit from the wall outlet before cleaning. Do not use liquid cleaners or aerosol cleaners. Use a damp cloth for
6. cleaning.
   ATTACHMENTS
7. Do not use attachments not recommended by the unit's manufacturer as they may cause hazards.
   WATER AND MOISTURE
   Do not use this unit near water. For example, near a bathtub, washbowl, kitchen sink, or laundry tub, in a wet basement, or near
8. a swimming pool.
   ACCESSORIES
   Do not place this unit on an unstable cart, stand, tripod, bracket, or table. The unit may fall, causing serious injury, and serious damage to the unit. Use only with a cart, stand, tripod,
8A. bracket, or table recommended by the manufacturer.
   An appliance and cart combination should be moved with care. Quick stops, excessive force,
9. and uneven surfaces may cause the appliance and cart combination to overturn.

PORTABLE CART WARNING
(symbol provided by RETAC)

S3126A

   VENTILATION
   Slots and openings in the cabinet and in the back or bottom are provided for ventilation, to ensure reliable operation of the unit, and to protect it from overheating. These openings must not be blocked or covered. The openings should never be blocked by placing the unit on a bed, sofa, rug, or other similar surface. This unit should never be placed near or over a radiator or heat source. This unit should not be placed in a built-in installation such as a bookcase or rack unless proper ventilation is provided
10. or the manufacturer's instructions have been adhered to.
   POWER SOURCES
   This unit should be operated only from the type of power source indicated on the rating plate. If you are not sure of the type of power supply to your home, consult your appliance dealer or local power company. For units intended to operate from battery
11. power, or other sources, refer to the operating instructions.
   GROUNDING OR POLARIZATION
   This unit is equipped with a polarized alternating-current line plug (a plug having one blade wider than the other). This plug will fit into the power outlet only one way. This is a safety feature. If you are unable to insert the plug fully into the outlet, try reversing the plug. If the plug should still fail to fit, contact your electrician to replace your obsolete outlet. Do not defeat the safety purpose of the polarized plug. If your unit is equipped with a 3-wire grounding-type plug, a plug having a third (grounding) pin, this plug will only fit into a grounding-type power outlet. This too, is a safety feature. If you are unable to insert the plug into
12. the outlet, contact your electrician to replace your obsolete outlet. Do not defeat the safety purpose of the grounding-type plug.
   POWER-CORD PROTECTION
   Power-supply cords should be routed so that they are not likely to be walked on or pinched by items placed upon or against
13. them, paying particular attention to cords at plugs, convenience receptacles, and the point where they exit from the appliance.
   LIGHTNING
   To protect your unit from a lightning storm, or when it is left unattended and unused for long periods of time, unplug it from the
14. wall outlet and disconnect the antenna or cable system. This will prevent damage to the unit due to lightning and power line surges.
   POWER LINES
   An outside antenna system should not be located in the vicinity of overhead power lines or other electric light or power circuits,
15. or where it can fall into such power lines or circuits. When installing an outside antenna system, extreme care should be taken to keep from touching such power lines or circuits, as contact with them might be fatal.
16. **OVERLOADING**
   Do not overload wall outlets and extension cords, as this can result in a risk of fire or electric shock.
   OBJECT AND LIQUID ENTRY
17. Do not push objects through any openings in this unit, as they may touch dangerous voltage points or short out parts that could result in fire or electric shock. Never spill or spray any type of liquid into the unit.
   OUTDOOR ANTENNA GROUNDING
   If an outside antenna or cable system is connected to the unit, be sure the antenna or cable system is grounded so as to provide some protection against voltage surges and built-up static charges. Section 810 of the National Electrical Code, ANSI/NFPA 70, provides information with respect to proper grounding of the mast and supporting structure, grounding of the lead-in
18. wire to an antenna discharge unit, size of grounding conductors, location of antenna discharge unit, connection to grounding electrodes, and requirements for the grounding electrode.
   SERVICING
   Do not attempt to service this unit yourself as opening or removing covers may expose you to dangerous voltage or other hazards. Refer all servicing to qualified service personnel.

IMPORTANT SAFEGUARDS (CONTINUED)

19. DAMAGE REQUIRING SERVICE

Unplug this unit from the wall outlet and refer servicing to qualified service personnel under the following conditions:

a. When the power-supply cord or plug is damaged.
b. If liquid has been spilled, or objects have fallen into the unit.
c. If the unit has been exposed to rain or water.
d. If the unit does not operate normally by following the operating instructions. Adjust only those controls that are covered by the operating instructions, as an improper adjustment of other controls may result in damage and will often require extensive work by a qualified technician to restore the unit to its normal operation.
e. If the unit has been dropped or the cabinet has been damaged.
f. When the unit exhibits a distinct change in performance, this indicates a need for service.

20. REPLACEMENT PARTS

When replacement parts are required, be sure the service technician uses replacement parts specified by the manufacturer or those that have the same characteristics as the original parts.
Unauthorized substitutions may result in fire, electric shock or other hazards.

21. SAFETY CHECK

Upon completion of any service or repairs to this unit, ask the service technician to perform safety checks to determine that the unit is in proper operating condition.

22. WALL OR CEILING MOUNTING

The product should be mounted to a wall or ceiling only as recommended by the manufacturer.

23. HEAT

The product should be situated away from heat sources such as radiators, heat registers, stoves, or other products (including amplifiers) that produce heat.

24. DISC TRAY

Keep your fingers well clear of the disc tray as it is closing. It may cause serious personal injury.

25. CONNECTING

When you connect the product to other equipment, turn off the power and unplug all of the equipment from the wall outlet. Failure to do so may cause an electric shock and serious personal injury. Read the owner's manual of the other equipment carefully and follow the instructions when making any connections.

26. SOUND VOLUME

Reduce the volume to the minimum level before you turn on the product. Otherwise, sudden high volume sound may cause hearing or speaker damage.

27. SOUND DISTORTION

Do not allow the product output distorted sound for a longtime. It may cause speaker overheating and fire.

28. HEADPHONES

When you use the headphones, keep the volume at a moderate level. If you use the headphones continuously with high volume sound, it may cause hearing damage.

29. LASER BEAM

Do not look into the opening of the disc tray or ventilation opening of the product to see the source of the laser beam. It may cause sight damage.

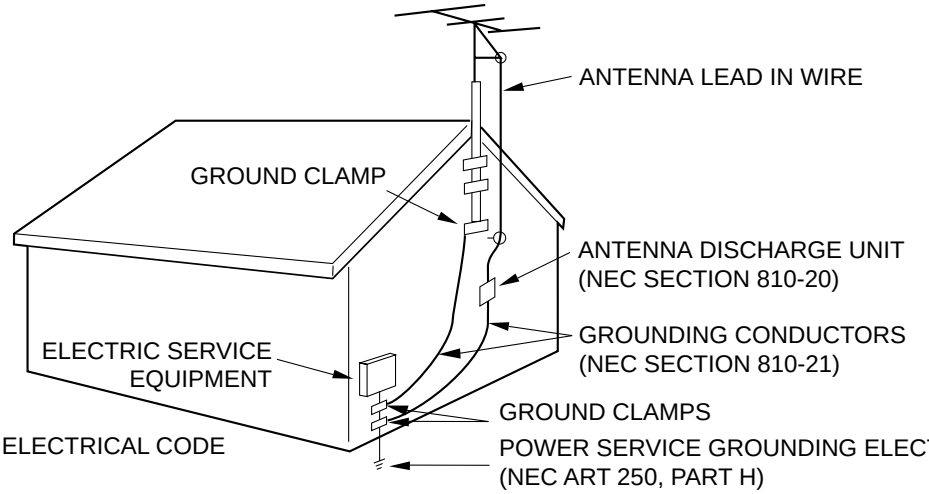
30. DISC

Do not use a cracked, deformed, or repaired disc. These discs are easily broken and may cause serious personal injury and product malfunction.

31. NOTE TO CATV SYSTEM INSTALLER

This reminder is provided to call the CATV system installer's attention to Article 820-40 of the NEC that provides guidelines for proper grounding and, in particular, specifies that the cable ground shall be connected to the grounding system of the building, as close to the point of cable entry as practical.

EXAMPLE OF ANTENNA GROUNDING AS PER THE NATIONAL ELECTRICAL CODE



S2898A

TAPE REMOVAL METHOD AT NO POWER SUPPLY

1. Remove the Top Cabinet, Front Cabinet and DVD Block and the Fig. 1 below can be seen. **(Refer to item 1 of the DISASSEMBLY INSTRUCTIONS.)**
2. Remove one screw of the Loading Motor from the insert hole for screw driver and remove the Loading Motor.
3. Rotate the Pinch Roller Cam in the direction of the arrow by hand to slacken the Video Tape. **(Refer to Fig. 2)**
4. Rotate the Clutch Ass'y either of the directions to wind the Video Tape in the Cassette Case.
5. Repeat the above step 3~4. Then take out the Video Cassette from the Deck Chassis. Be careful not to scratch on the tape.

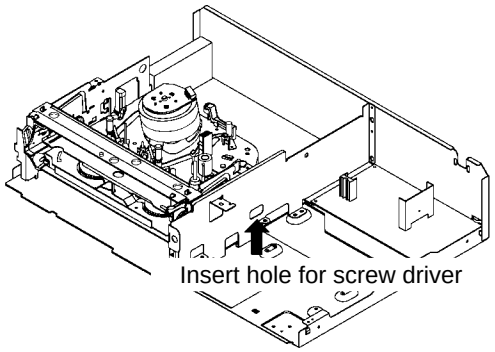


Fig. 1

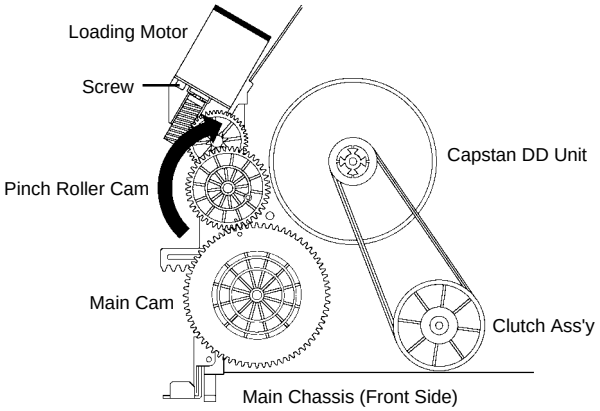


Fig. 2

DISC REMOVAL METHOD AT NO POWER SUPPLY

1. Remove the Top Cabinet and Front Cabinet. **(Refer to item 1 of the DISASSEMBLY INSTRUCTIONS.)**
2. Rotate the gear of Deck CD section in the direction of the arrow by hand, remove the disc from Deck CD. **(Refer to Fig. 3)**

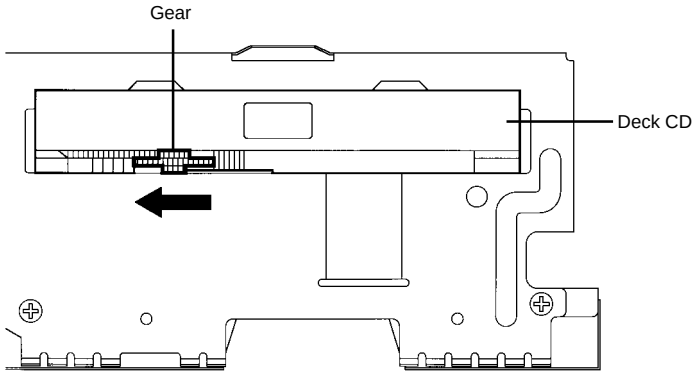


Fig. 3

PARENTAL CONTROL - RATING LEVEL

4 DIGIT PASSWORD CANCELLATION

If the stored 4 digit password in the Rating Level menu needs to be cancelled, please follow the steps below.

1. Ensure the DVD Set is connected to the TV.
2. Turn Unit ON.
3. Confirm that no sisc on the disc tray.
4. Press and hold the '7' key on the remote control unit.
5. Simultaneously press and hold the 'STOP' key on the front panel.
6. Hold both keys for more than 3 seconds.
7. The On Screen Display message 'INITIALIZED' will appear.
8. The 4 digit password has now been cleared.

NB: The above procedure will reset ALL of the player's settings to the default factory state.

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GENERAL SPECIFICATIONS

G-1	**Outline of the product**				DVD VIDEO PLAYER & VHS Player / Recorder
G-2	**DVD System**	Color System			NTSC
		Disc			DVD, CD-DA, CD-R/RW, VIDEO CD
		Disc Diameter			120 mm , 80 mm
		Deck	Disc Loading System		Front Disc Loading
			Motor		3 Motors
		Pick up			1-Lens 2-Beams System
		Playback time (Max)	DVD 1-Layer		135min (4.7GB)
					245min (8.5GB)
			CD		74min
			VIDEO CD		74min
		Search speed			Fwd 2-20 times / 4 step
				Actual	2-45 times (DVD, VIDEO CD)
					4-40 times (CD)
					Rev 2-20 times / 4 step
				Actual	2-45 times (DVD, VIDEO CD)
					4-40 times (CD)
		Slow speed			Fwd 1/7-1/2 times
				Actual	--
					Rev --
				Actual	--
G-3	**VCR**	System			VHS Player / Recorder
	System	Video System			NTSC
		Hi-Fi STEREO			Yes
		NTSC PB(PAL60Hz)			No
		Deck	DECK		OVD-7
			Loading System		Front
			Motor		3
		Heads	Video Head		4Head
			FM Audio Head		2Head
			Audio /Control		Mono/Yes
			Erase(Full Track Erase)		Yes
		Tape Speed	Rec PAL		-
			Rec NTSC		SP/SLP
			Play PAL		-
			Play NTSC		SP/LP/SLP
		Fast Forward / Rewind Time (Approx.) at 25oC			FF:1'48"/REW:1'48"
				with Cassette	T-120
		Forward/Reverse Picture Search	NTSC or PAL-M		SP/LP/SLP = 3x,5x / 7x,9x / 9x,15x
			PAL or SECAM		-
		Frame Advance			1/10
		Slow Speed			1/10
G-4	**Tuning**	Broadcasting System			US System M
	System	Tuner and	System		1Tuner
		Receive CH	Destination		US(w/CATV)
			Tuning System		F-Synth
			Input Impedance		VHF/UHF 75 OHM
			CH Coverage		2-69,4A,A-5~ A-1,A~I,
					J~ W, W+1-W+84
		Intermediate Frequency	Picture(FP)		45.75 MHz
			Sound(FS)		41.25 MHz
			FP-FS		4.50 MHz
		Preset CH			-
		RF Converter Output			Yes
			Channel		3 or 4 ch
			Level/Impedance		66 dBu / 75 Ohm
			Sound Selector		No
		Stereo/Dual TV Sound			US-ST
		Tuner Sound Muting			Yes
G-5	**Power**	Power Source	AC		120V 60Hz
			DC		-
		Power Consumption			20 W at 120V 60Hz
			Stand by		4 W at 120V 60Hz
			Per Year		-- W
		Protector	Power Fuse		Yes
G-6	**Regulation**		Safety		UL / CSA
			Radiation		FCC / IC
			Laser		DHHS
G-7	**Temperature**		Operation		5oC - 40oC
			Storage		-20oC - 60oC
G-8	**Operating Humidity**				Less than 80% RH

GENERAL SPECIFICATIONS

G-9	Signal	Video Signal	Output Level		1 V p-p/75 ohm (DVD,VCR)
			S/N Ratio (Weighted)		65 dB(DVD) 50 dB(VCR)
			Horizontal Resolution		500 Lines (DVD) 230 Lines(VCR Mode)
		RGB Signal	Output Level		-
		Audio Signal	Input Level Microphone		-
			Input Level Line		-8 dBm/ 50k ohm(VCR)
		(0dB=0.775Vrms)	Output Level Line		-8 dBm/ 1k ohm(DVD,VCR)
			Digital Output Level		0.5 V p-p / 75 ohm(DVD)
			S/N Ratio at (Weighted)		90dB(DVD), 42dB(VCR at SP)
			Harmonic Distortion (1KHz) Typical		0.008% (DVD), 1.5% (VCR)
			Frequency Response : DVD Mode at DVD		4 Hz - 22 KHz
			DVD Mode at VIDEO CD		4 Hz - 20 KHz
			DVD Mode at CD		4 Hz - 20 KHz
			VCR Mode at SP		100Hz - 10 KHz
			VCR Mode at LP		-
			VCR Mode at SLP		100Hz - 4 KHz
		Hi-Fi Audio Signal	Dynamic Range : More than		90dB
			Frequency Response		20Hz ~20kHz
			Wow And Flutter : Less than		0.01 %Wrms
			Channel Separation : More than		60 dB
			Harmonic Distortion : Less than		0.01
G-10	On Screen Display(DVD)	Menu			Yes
			Menu Type		Character
			Language		Yes
				Menu	Yes
				Sub Title	Yes
				Audio	Yes
			Picture		Yes
				TV Screen Size	Yes
				OSD Display On/Off	Yes
			Sound		Yes
				DRC(Dynamic Range Control)	Yes
				dts Decode	No
				Output(5.1ch/2ch)	No
				Surround On/Off	No
				Center On/Off	No
				Sub Woofer On/Off	No
			Parental		Yes
				Password Lock/Unlock	Yes
				Rating Level	Yes
			Other		Yes
				OSD Language(Set up Language)	Yes
				Output(RGB/Composite)	No
			Open		Yes
			Close		Yes
			No disc		Yes
			Reading		Yes
			Play		Yes
			Still/Pause		Yes
			Stop		Yes
			Prohibit Mark		Yes
			Step		Yes
			Next		Yes
			Back		Yes
			Random		Yes (CD, VIDEO CD, MP3)
			Repeat		Yes
			Slow+ ##		Yes
			Slow- ##		No
			Search+ ##		Yes
			Search- ##		Yes
			Jump		No
			Resume		Yes
			Title No.		Yes
			Chapter No.		Yes
			Track No.		Yes
			Time		Yes
			Sub Title No.		Yes
			Angle No.		Yes
			Vocal On/Off		Yes
			Audio No.		Yes
			Audio Stereo L/R		Yes (VIDEO CD)
			Zoom		Yes
			Marker No.		Yes
			Spatialzer (N-2-2)		Yes
			Program Play Back		Yes (CD, VIDEO CD, MP3)
			MP3	File Name	Yes
				File No	Yes
				Time	Yes
				Track No	Yes

GENERAL SPECIFICATIONS

	On Screen Display(VCR)	Menu			Yes	
			Menu Type		Character	
			Timer Rec Set		Yes	
			Auto Repeat On/Off		Yes	
			SAP On/Off		Yes	
			Surround On/Off			No
			CH Set-Up		Yes	
				TV/CATV	Yes	
				Auto CH Memory	Yes	
				Add/Delete	Yes	
				Guide CH		No
			System Set Up		Yes	
				Clock Set	Yes (Calendar 12H)	
				Language	Yes	
				No Noise Back Ground	Yes	
				Auto Clock	Yes	
				Standard Time	Yes	
				Daylight Saving Time	Yes	
		G-CODE(or SHOWVIEW or PLUSCODE)No. Entry				No
		Stereo,Audio Output,SAP			Yes	
		Play/Stop/FF/Rew/Rec/OTR/T-Rec/Pause/Eject/Tape In/Repeat (Symbol Mark)			Yes	
				CH/AV	Yes	
				Clock	Yes	
				Repeat	Yes	
				Pin Code		No
				Tape Counter	Yes	
				Index	Yes	
				Hotel Lock		No
				Tape Speed	Yes	
				ATR / Manual Tracking	Yes	
				Hi-Fi	Yes	
G-11	**OSD Language**		DVD OSD		Eng Fre Spa	
			VCR OSD		Eng Fre Spa	
G-12	**Clock,Timer and Timer Back-up**	Calendar			1990/1/1 ~ 2081/12/31	
		Timer Events			8 Program/ 1 Month	
		One Touch Recording Max Time			5 Hours(30,60,90,120,180,240,300)	
		OTPB Valid Time				No
		Timer Back-up (at Power Off Mode)			5sec	
G-13	**Display**	DISPLAY			Yes	
				DISPLAY type	Fluorescent Indicator	
				Clock/Counter,CH,Timer Rec,OTR, Play Rec.FF(Cue),Rew(Rev),Stop.ATR,Eject		No
				VCR	Yes	
				DVD		No
				CD		No
				Clock	Yes (12h)	
				AM		No
				PM	Yes	
				Counter VCR	Yes (hour:min:sec)	
				DVD	Yes (hour:min:sec)	
				CD	Yes (min:sec)	
				Counter Remain		No
				Play	Yes	
				Stop		No
				Rec	Yes	
				FF / Cue		No
				REW /Review		No
				Pause/Still		No
				OTR		No
				T-Rec	Yes	
				Chapter		No
				TITLE		No
				TRACK	Yes	
				Repeat		No
				Hi-Fi		No
				SP	Yes	
				LP	Yes	
				SLP(EP)	Yes	
				CH	Yes	
				RF Output CH		No
				Tape In	Yes	
				Eject	Yes	
				PBC(Play Back Control)	Yes	

GENERAL SPECIFICATIONS

G-14	**Remote Control**	Unit		RC-FE
		Glow in Dark Remocon		No
		Power Source	Voltage(D.C)	3V
			UM size x pcs	UM-4 x 2 pcs
		Total Keys		45 Key
		Keys	Power	Yes
			DISPLAY/CALL	Yes
			1	Yes
			2	Yes
			3	Yes
			4	Yes
			5	Yes
			6	Yes
			7	Yes
			8	Yes
			9	Yes
			0	Yes
			Input Select	Yes
			UP/CH+	Yes
			DOWN/CH-	Yes
			LEFT/ SET- / TRACKING-	Yes
			RIGHT/ SET+ / TRACKING+	Yes
			VCR/DVD	Yes
			TV/VCR	Yes
			DVD MENU	Yes
			TITLE	Yes
			SET UP MENU/VCR MENU	Yes
			SELECT/ENTER	Yes
			CLEAR/CANCEL	Yes
			RETURN	Yes
			PLAY	Yes
			STOP	Yes
			PAUSE/STILL/STEP	Yes
			FF(Cue)/SEARCH+	Yes
			REW(Review)/SEARCH-	Yes
			REC/OTR	Yes
			SKIP+ / INDEX+	Yes
			SKIP- / INDEX-	Yes
			AUDIO / AUDIO SELECT	Yes
			ANGLE/COUNTER RESET	Yes
			SUB TITLE/ATR	Yes
			PLAY MODE/SPEED	Yes
			T-REC	Yes
			CLOCK / COUNTER	Yes
			MARKER/ZERO RETURN	Yes
			ZOOM/CM SKIP	Yes
			REPEAT A-B	Yes
			SLOW(Forward)	Yes
			MARKER	No
			OPEN/CLOSE	Yes
			EJECT	Yes
G-15	**Features (DVD)**	Auto Power Off		No
		Parental Lock		Yes
		Video CD Playback		Yes
		MP3 Playback		Yes
		Digital Out	Dolby Digital	Yes
			MPEG	Yes
			PCM	Yes
			DTS	Yes
		Down Mix Out	(Dolby Digital)	Yes
			(DTS)	No
		Spatialzer (N-2-2)		Yes
		Screen Saver		No
		Auto Stop		Yes (5min.)

GENERAL SPECIFICATIONS

	Features (VCR)	Auto Head Cleaning	Yes	
		Auto Tracking	Yes	
		HQ (VHS Standard High Quality)	Yes	
		Auto Power On, Auto Play, Auto Rewind, Auto Eject	Yes	
		Auto Power Off		No
		Forward/Reverse Picture Search	Yes	
		VIDEO PLUS+(SHOWVIEW,G-CODE)		No
		One Touch Playback		No
		Auto CH Memory	Yes	
		AREA CODE		No
		Auto Clock Set	Yes	
		Index Search	Yes	
		SQPB	Yes	
		CATV	Yes	
		Energy Star		No
		MTS(SAP)	Yes	
		CM Skip(30sec x 6 Times)	Yes	
		Power On Memory		No
		Surround		No
		Copy (Disc to Tape)	Yes (by Conditioning)	
G-16	**Accessories**	Owner's Manual Language	English	
		w/Guarantee Card	Yes	
		Remote Control Unit	Yes	
		Guarantee Card		No
		Warning Sheet		No
		Service Station List		No
		Important Tag		No
		AC Plug Adapter		No
		Quick Set-up Sheet	Yes (Spanish)	
		Battery	Yes	
		UM size x pcs	UM-4 x 2 pcs	
		AC Cord		No
		AV Cord	Yes (1.2m)	
		75 Ohm Coaxial Cable	Yes (1.2m)	
		S-Video Cable		No
		21pin cable		No
		800 No Sticker		No
		Toll Free Insert Sheet		No
		Registration Card	Yes	
		Safety Tip		No
		Information Sheet		No

GENERAL SPECIFICATIONS

G-17	**Interface**	Switch	Front	Power	Yes
				Play	Yes
				Eject (VCR)	Yes
				Stop	Yes
				Rec/OTR	Yes
				Open/Close (DVD)	Yes
				CH +	Yes
				CH -	Yes
				FF/ Search(>>)	Yes
				Rew/Search(<<)	Yes
				Still/Pause	No
				Shuttle(Search/REV/FWD)	No
				DVD/VCR	Yes
				Input Select	Yes
				Main Power SW	No
			Rear	Attenuator	No
				Video/RGB Selector	No
				RF Out(Slide SW)	Yes (3ch/4ch)
				Main Power SW	No
		Volume		Phones Volume	No
				Mic Volume	No
				Echo Volume	No
				Rec/OTR	No
		Terminals	Front	Video In	RCA x1(Black)
				Audio In	RCA x 2(Stereo, Black)
			Rear	Video Output	RCA x1(Yellow) S-Video x 1(DVD Signal Only) Component x1 (RCA 3pin,DVD Signal Only)
				Audio Output	RCA x 4(Stereo, White/Red) Coaxial x 1 (Digital Audio,DVD Signal Only)
				Optical Out (Option)	Yes (Digital Audio,DVD Signal Only)
				Video Input (Option)	RCA x 1 (Yellow)
				Audio Input (Option)	RCA x 2 (Stereo,Red/White)
				RF Input / Output	Yes
				Euro Scart	No
				AC Inlet	No
		Indicator	LED	Power	No
				Rec	No
				T-Rec	No
				TV/VCR	No
				DVD	Yes (GREEN)
				VCR	Yes (GREEN)
				Surround	No
				Level Meter	No
G-18	**Set Size**			Approx. W x D x H (mm)	430 x 314.5 x 99
G-19	**Weight**			Net (Approx.)	4.5 kg(9.9lbs)
				Gross (Approx.)	5.5 kg(12.1lbs)
G-20	**Carton**		Master Carton		No
				Content	--- Sets
				Material	--- / ---
				Dimensions W x D x H(mm)	---
				Description of Origin	---
			Gift Box		Yes
				Material	Single Full Color Carton
				W/Color Photo Label	No
				Dimensions W x D x H(mm)	500 x 430 x 180
				Design	As Per BUYER 's
				Description of Origin	Yes
			Drop Test		Natural Dropping At 1 Corner / 3 Edges / 6 Surfaces
				Height (cm)	80 cm
			Container Stuffing		1,623 Sets/40' container
G-21	**Material**		Cabinet	Front	PS 94V2 or More / DECABROM
			PCB	Non-Halogen Demand	No
				Eyelet Demand	No

DISASSEMBLY INSTRUCTIONS

1. REMOVAL OF MECHANICAL PARTS AND P.C. BOARDS

1-1: TOP CABINET AND FRONT CABINET (Refer to Fig. 1-1)

1. Remove the 5 screws ①.
2. Remove the Top Cabinet in the direction of arrow (A).
3. Disconnect the following connectors: (CP681, CP601).
4. Unlock the 8 supports ②.
5. Remove the Front Cabinet in the direction of arrow (B).

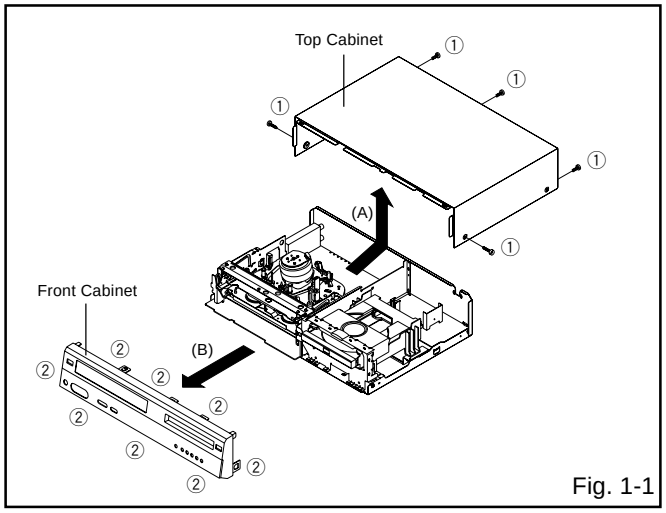


Fig. 1-1

1-2: DISPLAY PCB AND OPERATION 1/2 PCB (Refer to Fig. 1-2)

1. Remove the 11 screws ①.
2. Remove the Display PCB and Operation 1/2 PCB in the direction of arrow.

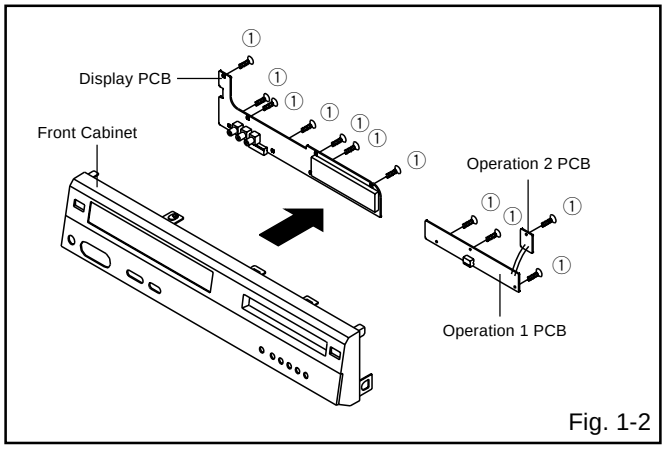


Fig. 1-2

1-3: FLAP (Refer to Fig. 1-3)

1. Open Flap to 90˚ and flex in direction of arrow (A), at the same time slide in direction of arrow (B).
2. Then lift in direction of arrow (C).

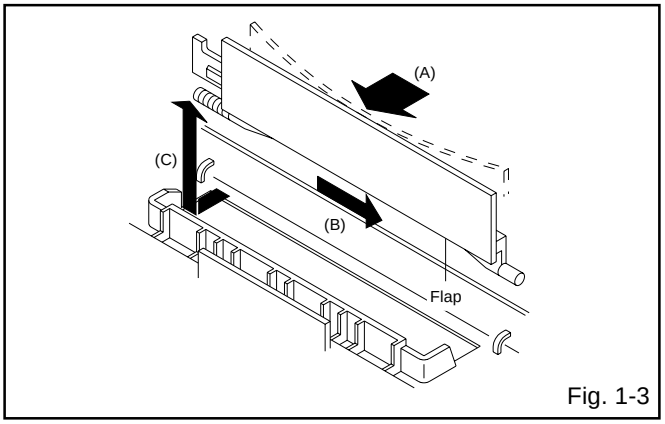


Fig. 1-3

1-4: DECK CD AND DVD PCB (Refer to Fig. 1-4)

1. Make the short circuit on the position as shown **Fig. 1-4** using a soldering. If you remove the Deck CD with no soldering, the Laser may be damaged.
2. Remove the 4 screws ①.
3. Disconnect the following connectors: (CP503,CP8001, CP8502).
4. Remove the Deck Angle in the direction of arrow (A).
5. Remove the 2 screws ②.
6. Remove the Front Shield in the direction of arrow (B).
7. Disconnect the following connectors: (CP2301, CP2302 and CP2601).
8. Remove the 4 screws ③.
9. Remove the Deck CD in the direction of arrow (C).
10. Remove the 4 screws ④.
11. Remove the DVD PCB in the direction of arrow (D).

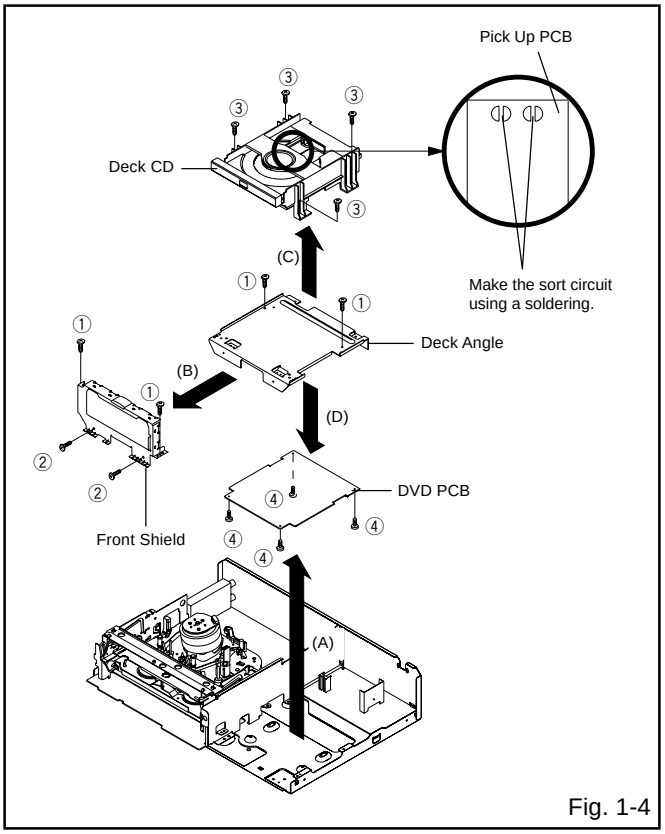


Fig. 1-4

DISASSEMBLY INSTRUCTIONS

NOTE

When the installation of the Deck CD, remove all the soldering on the short circuit position after the connection of Pick Up PCB and DVD PCB connector.

1-5: POWER PCB (Refer to Fig. 1-5)

1. Remove the 3 screws ①.
2. Disconnect the following connector: (CP1701).
3. Remove the Power PCB in the direction of arrow.

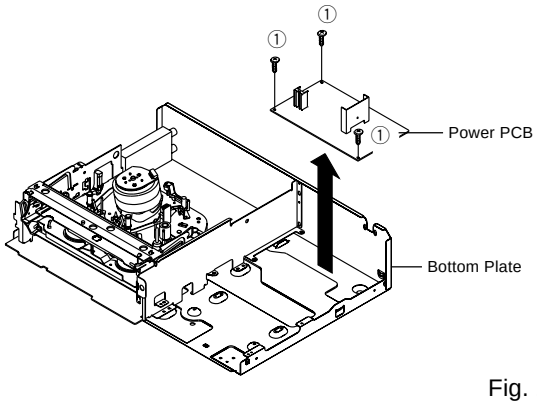


Fig. 1-5

1-6: VCR DECK (Refer to Fig. 1-6)

1. Unlock the 2 supports ① and remove the Top Holder.
2. Remove the 3 screws ②.
3. Disconnect the following connectors: (CP101, CP102, CP103 and CP3001).
4. Remove the AC Head Cover and VCR Deck in the direction of arrow.

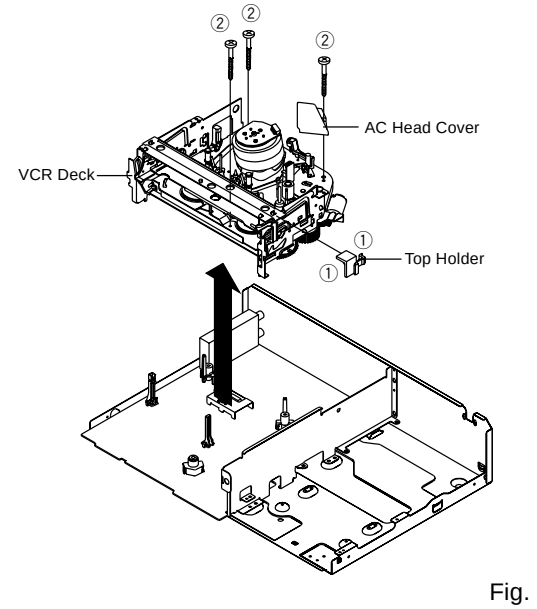


Fig. 1-6

1-7: VCR PCB (Refer to Fig. 1-7)

1. Remove the screw ①.
2. Remove the 8 screws ②.
3. Remove the VCR PCB in the direction of arrow.

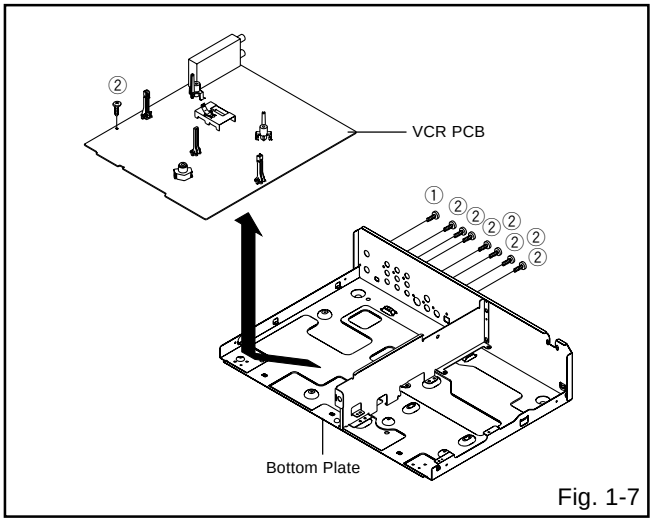


Fig. 1-7

DISASSEMBLY INSTRUCTIONS

2. REMOVAL OF VCR DECK PARTS

2-1: TOP BRACKET (Refer to Fig. 2-1)

1. Extend the 2 supports ①.
2. Slide the 2 supports ② and remove the Top Bracket.

NOTE

1. After the installation of the Top Bracket, bend the support ① so that the Top Bracket is fixed.

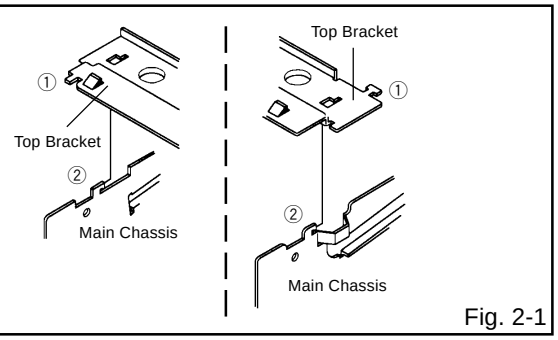


Fig. 2-1

2-2: CASSETTE HOLDER ASS'Y (Refer to Fig. 2-2)

1. Move the Cassette Holder Ass'y to the front side.
2. Push the Locker R to remove the Cassette Side R.
3. Remove the Cassette Side L.

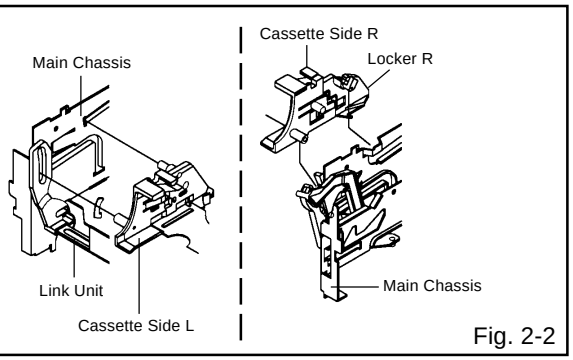


Fig. 2-2

2-3: CASSETTE SIDE L/R (Refer to Fig. 2-3-A)

1. Remove the Locker Spring.
2. Unlock the 4 supports ① and then remove the Cassette Side L/R.
3. Unlock the support ② and then remove the Locker R.

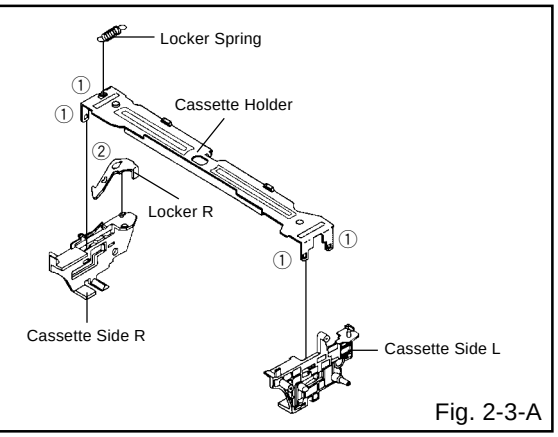


Fig. 2-3-A

NOTE

1. In case of the Locker R installation, check if the two positions of Fig. 2-3-B are correctly locked.
2. When you install the Cassette Side R, be sure to move the Locker R after installing.

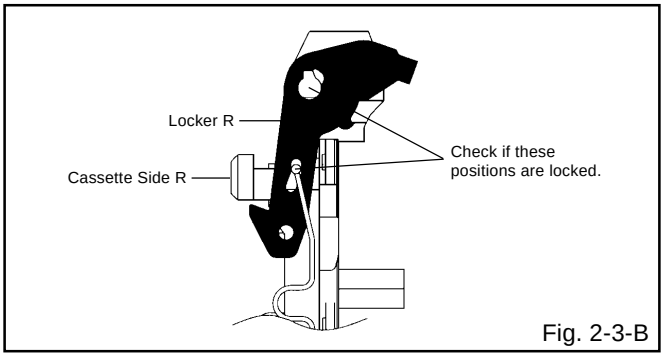


Fig. 2-3-B

2-4: LINK UNIT (Refer to Fig. 2-4)

1. Set the Link Unit to the Eject position.
2. Unlock the support ①.
3. Remove the (A) side of the Link Unit first, then remove the (B) side.

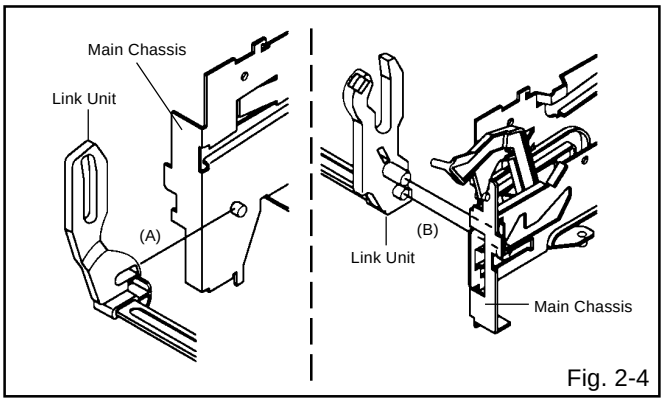


Fig. 2-4

2-5: LINK LEVER/FLAP LEVER (Refer to Fig. 2-5)

1. Extend the support ①.
2. Remove the Link Lever.
3. Remove the Flap Lever.

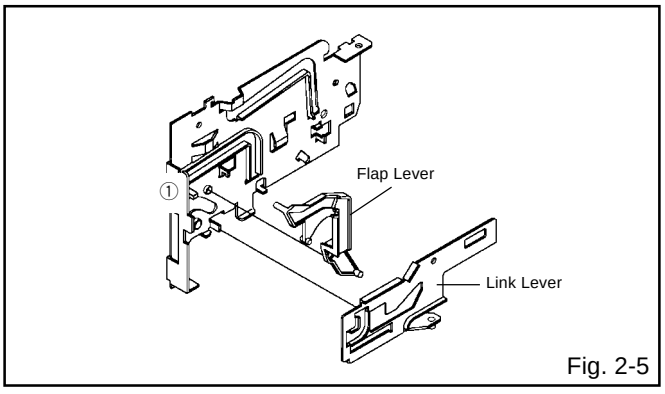


Fig. 2-5

DISASSEMBLY INSTRUCTIONS

2-6: LOADING MOTOR/WORM (Refer to Fig. 2-6-A)

1. Remove the screw ①.
2. Remove the Loading Motor.
3. Remove the Worm.

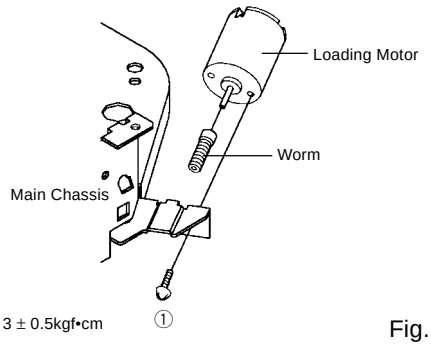


Fig. 2-6-A

NOTE

1. In case of the Worm installation, check if the value of the Fig. 2-6-B is correct.
2. In case of the Loading Motor installation, hook the wire on the Cassette Opener as shown Fig. 2-6-C.
3. When installing the wires between Capstan DD Unit and Loading Motor, connect them correctly as shown Fig. 2-6-D.

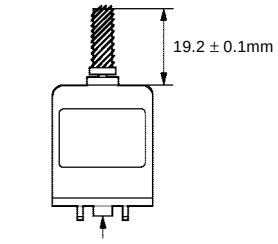


Fig. 2-6-B

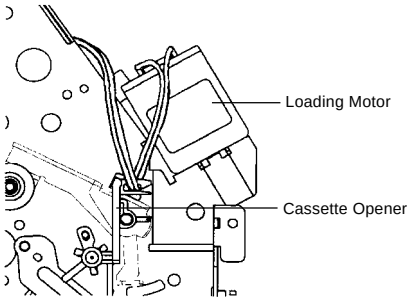


Fig. 2-6-C

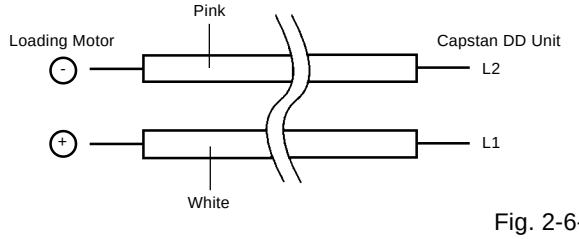


Fig. 2-6-D

2-7: TENSION ASS'Y (Refer to Fig. 2-7-B)

1. Turn the Pinch Roller Cam clockwise so that the Tension Holder hook is set to the position of Fig. 2-7-A to move the Tension Arm Ass'y.
2. Remove the Tension Spring.
3. Unlock the 2 supports ① and remove the Tension Band.
4. Unlock the support ② and remove the Tension Arm Ass'y.
5. Unlock the support ③ and remove the Tension Connect.
6. Float the hook ④ and turn it clockwise then remove the Tension Holder.

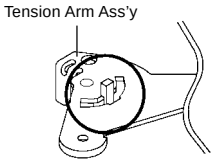


Fig. 2-7-A

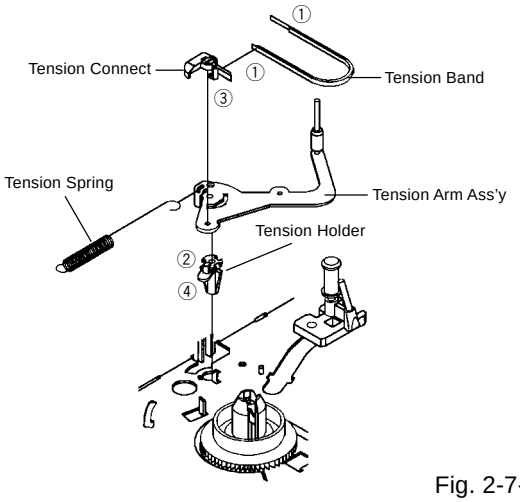


Fig. 2-7-B

NOTE

1. In case of the Tension Band installation, note the direction of the installation. **(Refer to Fig. 2-7-C)**
2. In case of the Tension Band installation, install correctly as Fig. 2-7-D.
3. In case of the Tension Connect installation, install as the circled section of Fig. 2-7-E.

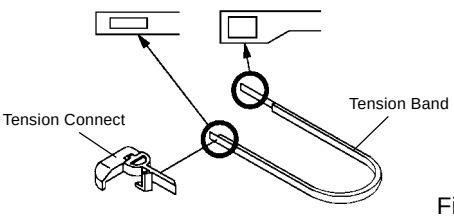


Fig. 2-7-C

DISASSEMBLY INSTRUCTIONS

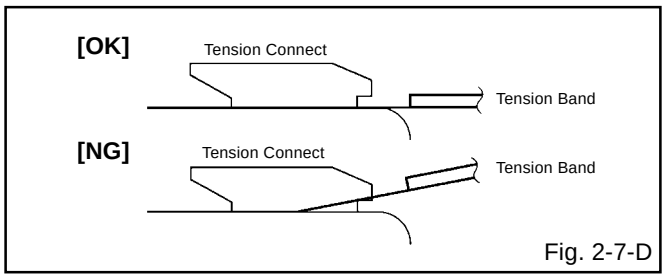


Fig. 2-7-D

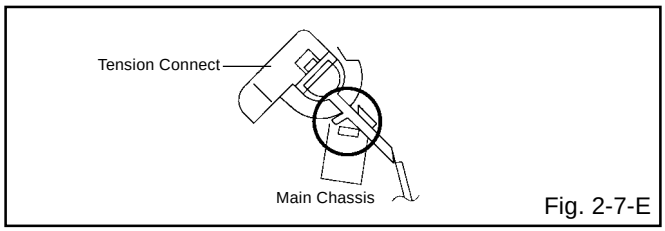


Fig. 2-7-E

2-8: T BRAKE ARM/T BRAKE BAND (Refer to Fig. 2-8-A)

1. Remove the T Brake Spring.
2. Turn the T Brake Arm clockwise and bend the hook section to remove it.
3. Unlock the 2 supports ① and remove the T Brake Band.

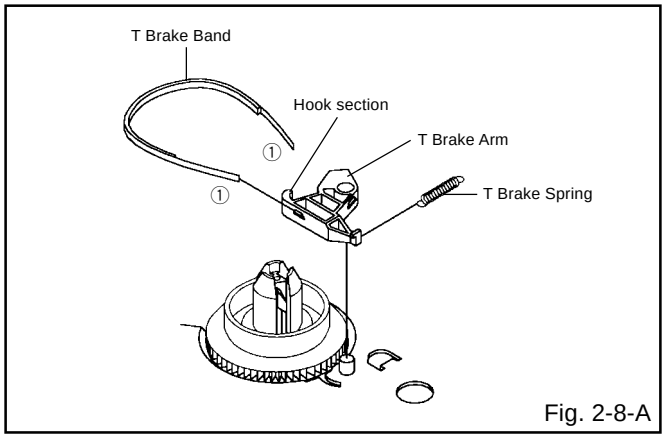


Fig. 2-8-A

NOTE

1. In case of the T Brake Band installation, install correctly as Fig. 2-8-B.

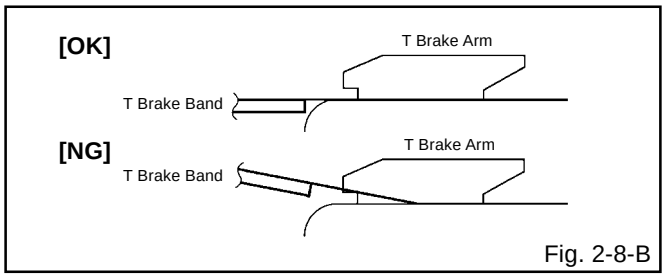


Fig. 2-8-B

2-9: S REEL/T REEL/IDLER ARM ASS'Y/IDLER GEAR (Refer to Fig. 2-9-A)

1. Remove the S Reel and T Reel.
2. Remove the 2 Polyslider Washers ①.
3. Remove the Idler Arm Ass'y and Idler Gear.

NOTE

1. Take care not to damage the gears of the S Reel and T Reel.
2. The Polyslider Washer may be remained on the back of the reel.
3. Take care not to damage the shaft.
4. Do not touch the section "A" of S Reel and T Reel. (Use gloves.) **(Refer to Fig. 2-9-A)** Do not adhere the stains on it.
5. When you install the reel, clean the shaft and grease it. (If you do not grease, noise may be heard in FF/REW mode.)
6. After installing the reel, adjust the height of the reel. **(Refer to MECHANICAL ADJUSTMENT)**

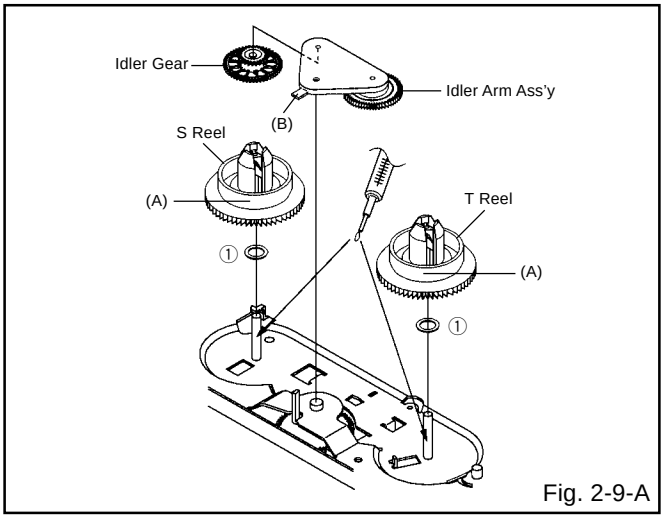


Fig. 2-9-A

NOTE

1. In case of the S Reel and T Reel installation, check if the correct parts are installed. **(Refer to Fig. 2-9-B)**
2. In case of the Idler Arm Ass'y installation, install correctly as Fig. 2-9-C. And also set it so that the section "B" of Fig. 2-9-A is placed under the Main Chassis tab.

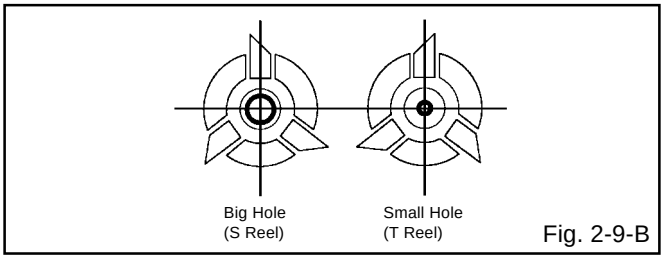


Fig. 2-9-B

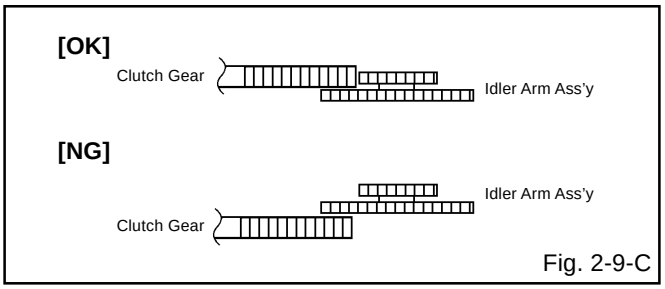


Fig. 2-9-C

DISASSEMBLY INSTRUCTIONS

2-10: CASSETTE OPENER/PINCH ROLLER BLOCK/P5 ARM ASS'Y (Refer to Fig. 2-10-A)

1. Unlock the support ① and remove the Cassette Opener.
2. Remove the Pinch Roller Block and P5 Arm Ass'y.

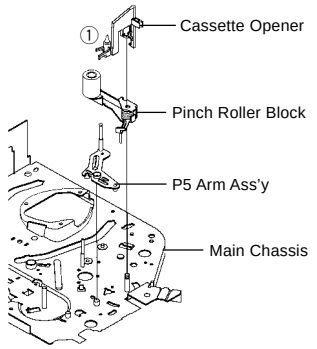


Fig. 2-10-A

NOTE

1. Do not touch the Pinch Roller. (Use gloves.)
2. In case of the Pinch Roller Block and the Pinch Roller Cam installation, install correctly as Fig. 2-10-B.

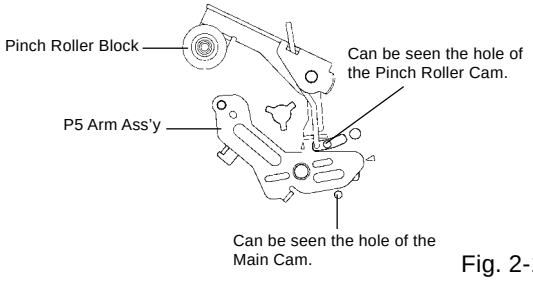


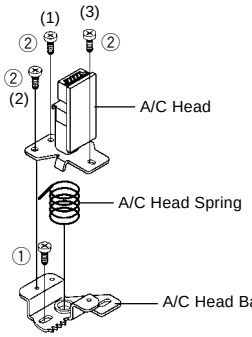
Fig. 2-10-B

2-11: A/C HEAD (Refer to Fig. 2-11-A)

1. Remove the screw ①.
2. Remove the A/C Head Base.
3. Remove the 3 screws ②.
4. Remove the A/C Head and A/C Head Spring.

NOTE

1. Do not touch the A/C Head. (Use gloves.)
2. When you install the A/C Head Spring, install as shown in Fig. 2-11-B.
3. When you install the A/C Head, tighten the screw (1) first, then tighten the screw (2), finally tighten the screw (3).



• Screw Torque: 5 ± 0.5kgf•cm (Screw ①)

Fig. 2-11-A

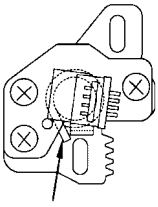
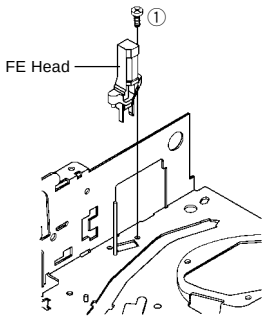


Fig. 2-11-B

2-12: FE HEAD (RECORDER ONLY) (Refer to Fig. 2-12)

1. Remove the screw ①.
2. Remove the FE Head.



• Screw Torque: 5 ± 0.5kgf•cm
• The FE Head is not installed on the Video Cassette Player.

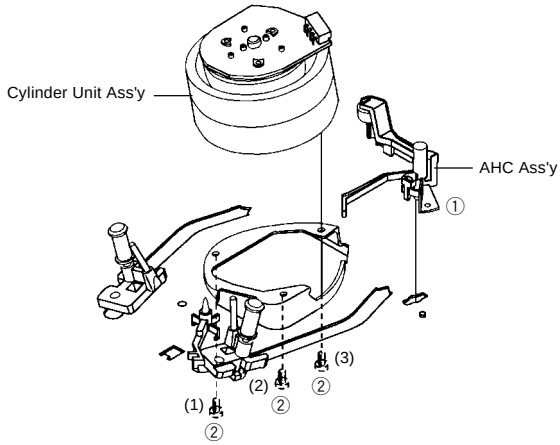
Fig. 2-12

2-13: AHC ASS'Y/CYLINDER UNIT ASS'Y (Refer to Fig. 2-13)

1. Unlock the support ① and remove the AHC Ass'y.
2. Disconnect the following connector: (CD2001)
3. Remove the 3 screws ②.
4. Remove the Cylinder Unit Ass'y.

NOTE

1. When you install the Cylinder Unit Ass'y, tighten the screws from (1) to (3) in order while pulling the Ass'y toward the left front direction.



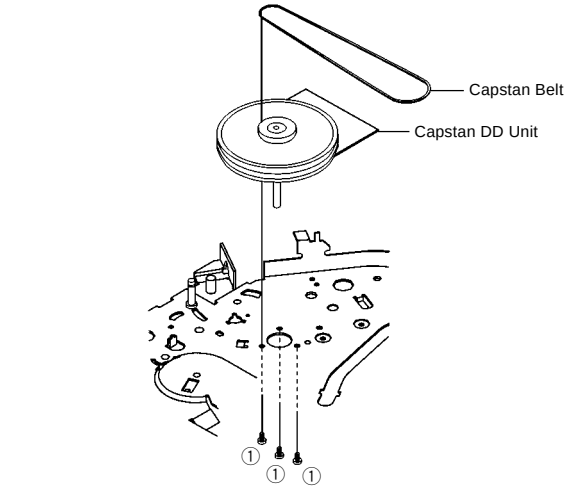
• Screw Torque: 3 ± 0.5kgf•cm

Fig. 2-13

DISASSEMBLY INSTRUCTIONS

2-14: CAPSTAN DD UNIT (Refer to Fig. 2-14-A)

1. Remove the Capstan Belt.
2. Remove the 3 screws ①.
3. Remove the Capstan DD Unit.



• Screw Torque: 4 ± 0.5kgf•cm

Fig. 2-14-A

NOTE

1. In case of the Capstan DD Unit installation, apply the silicon bond (TSE3843-W) on the position Fig. 2-14-B correctly. (If no silicon bond applied, abnormal noise will be heard on the deck operation.) **(Refer to Fig. 2-14-B, C)**

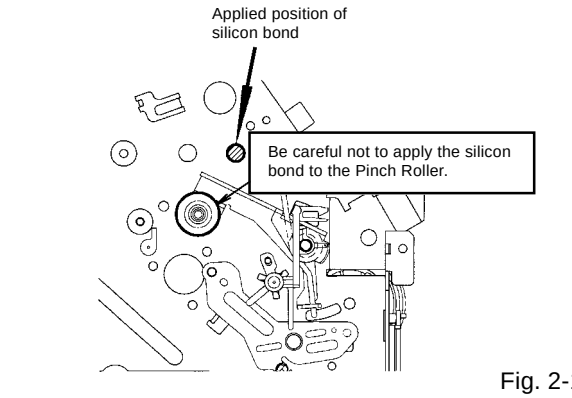


Fig. 2-14-B

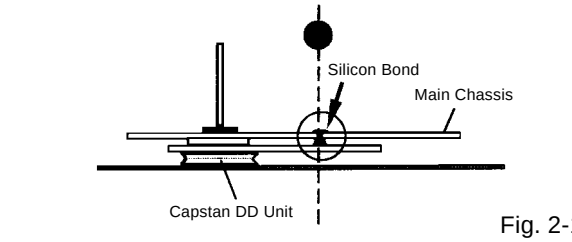


Fig. 2-14-C

2-15: MAIN CAM/PINCH ROLLER CAM/JOINT GEAR (Refer to Fig. 2-15-A)

1. Remove the E-Ring ①, then remove the Main Cam.
2. Remove the E-Ring ②, then remove the Pinch Roller Cam and Joint Gear.

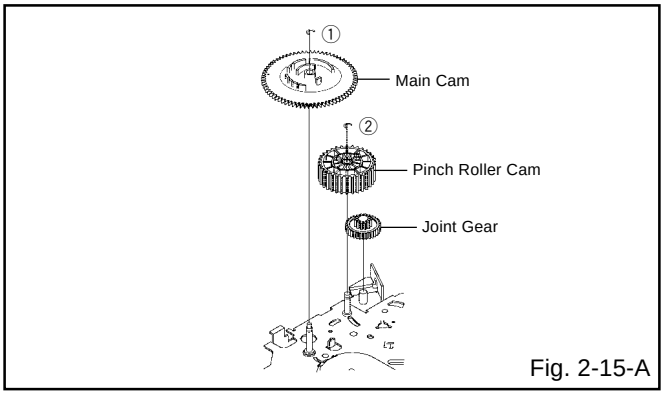


Fig. 2-15-A

NOTE

1. In case of the Pinch Roller Cam and Main Cam installation, install them as the circled section of Fig. 2-15-B so that the each markers are met. **(Refer to Fig. 2-15-B)** And also can be seen the Main Chassis hole through the Main Cam maker hole.

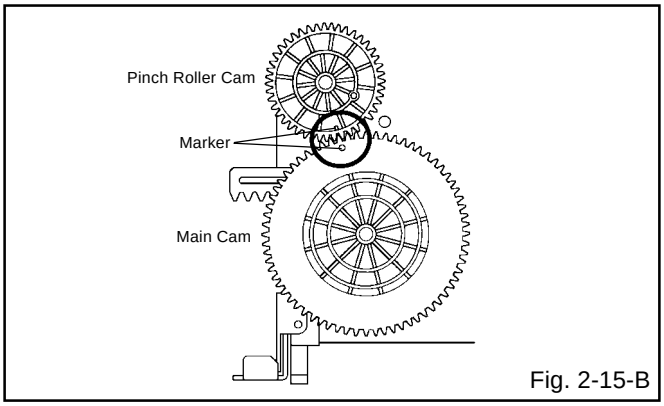


Fig. 2-15-B

2-16: LOADING GEAR S/T UNIT (Refer to Fig. 2-16-A)

1. Remove the E-Ring ① and remove the Main Loading Gear.
2. Remove the Main Rod, Tension Lever, Loading Arm S Unit and Loading Arm T Unit.

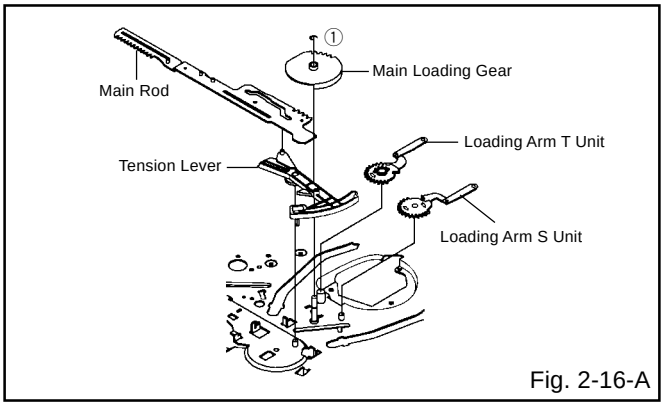


Fig. 2-16-A

DISASSEMBLY INSTRUCTIONS

NOTE

1. When you install the Loading Arm S Unit, Loading Arm T Unit and Main Loading Gear, align each marker. **(Refer to Fig. 2-16-B)**

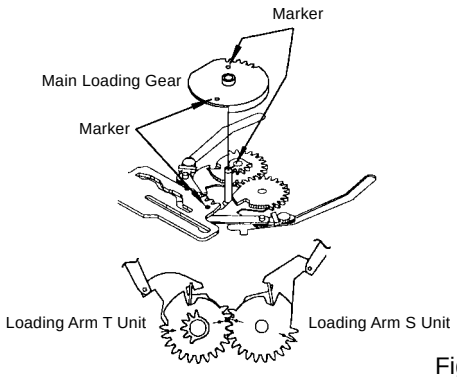


Fig. 2-16-B

2-17: CLUTCH ASS'Y/RING SPRING/CLUTCH LEVER/ CLUTCH GEAR (Refer to Fig. 2-17-A)

1. Remove the Polyslider Washer ①.
2. Remove the Clutch Ass'y and Ring Spring.
3. Remove the Clutch Lever.
4. Remove the Coupling Gear, Coupling Spring and Clutch Gear.

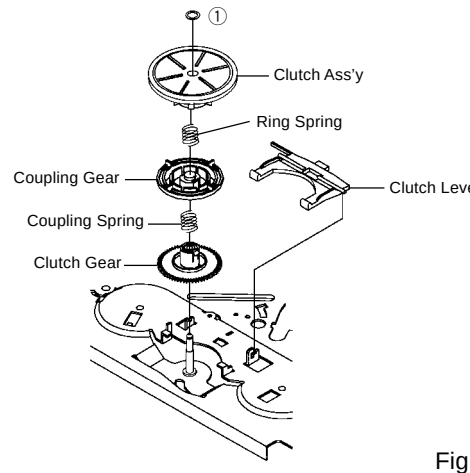


Fig. 2-17-A

NOTE

1. In case of the Clutch Ass'y installation, install it with inserting the spring of the Clutch Ass'y into the dent of the Coupling Gear. **(Refer to Fig. 2-17-B)**

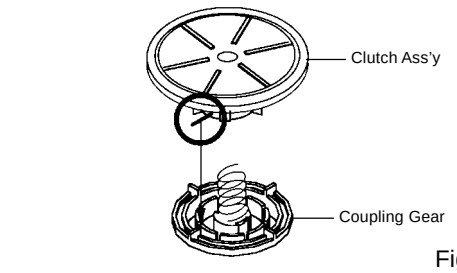


Fig. 2-17-B

2-18: CASSETTE GUIDE POST/INCLINED BASE S/T UNIT/P4 CAP (Refer to Fig. 2-18-A)

1. Remove the P4 Cap.
2. Unlock the support ① and remove the Cassette Guide Post.
3. Remove the Inclined Base S Unit and Inclined Base T Unit.

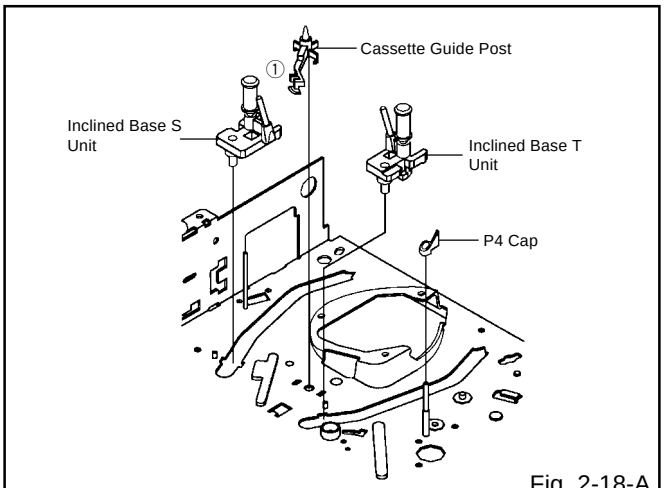


Fig. 2-18-A

NOTE

1. Do not touch the roller of Guide Roller.
2. In case of the P4 Cap installation, install it with parallel for "A" and "B" of Fig. 2-18-B.
3. In case of the Cassette Guide Post installation, install correctly as the circled section of Fig. 2-18-C.

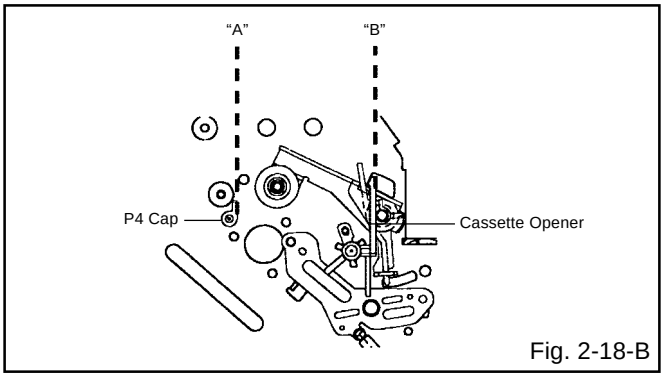


Fig. 2-18-B

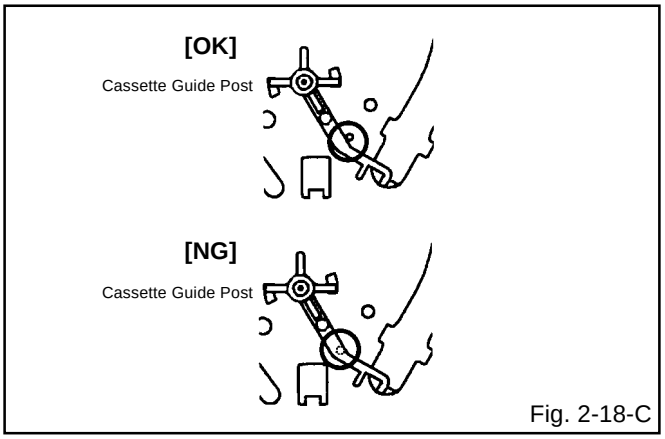


Fig. 2-18-C

DISASSEMBLY INSTRUCTIONS

3. REMOVAL AND INSTALLATION OF FLAT PACKAGE IC

REMOVAL

1. Put the Masking Tape (cotton tape) around the Flat Package IC to protect other parts from any damage. **(Refer to Fig. 3-1.)**

   NOTE

   Masking is carried out on all the parts located within 10 mm distance from IC leads.

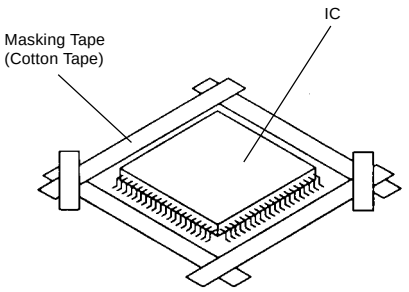


Fig. 3-1

2. Heat the IC leads using a blower type IC desoldering machine. **(Refer to Fig. 3-2.)**

   NOTE

   Do not add the rotating and the back and forth directions force on the IC, until IC can move back and forth easily after desoldering the IC leads completely.

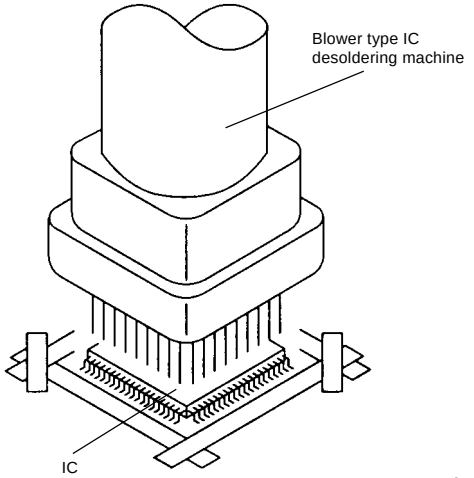


Fig. 3-2

3. When IC starts moving back and forth easily after desoldering completely, pickup the corner of the IC using a tweezers and remove the IC by moving with the IC desoldering machine. **(Refer to Fig. 3-3.)**

   NOTE

   Some ICs on the PCB are affixed with glue, so be careful not to break or damage the foil of each IC leads or solder lands under the IC when removing it.

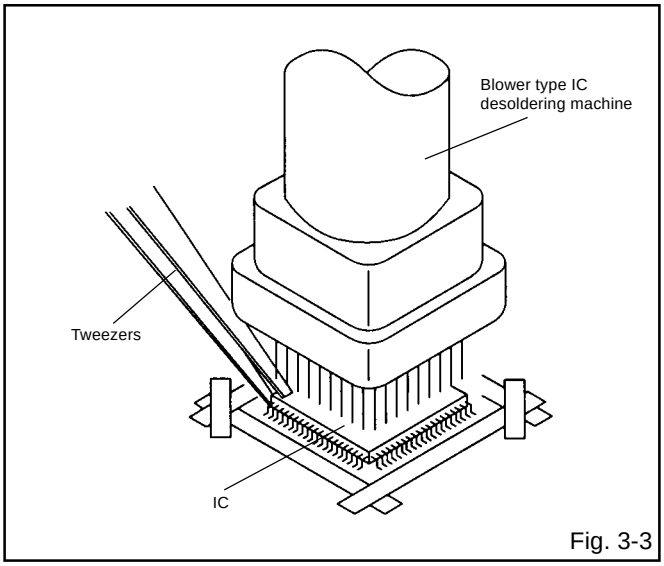


Fig. 3-3

4. Peel off the Masking Tape.
5. Absorb the solder left on the pattern using the Braided Shield Wire. **(Refer to Fig. 3-4.)**

   NOTE

   Do not move the Braided Shield Wire in the vertical direction towards the IC pattern.

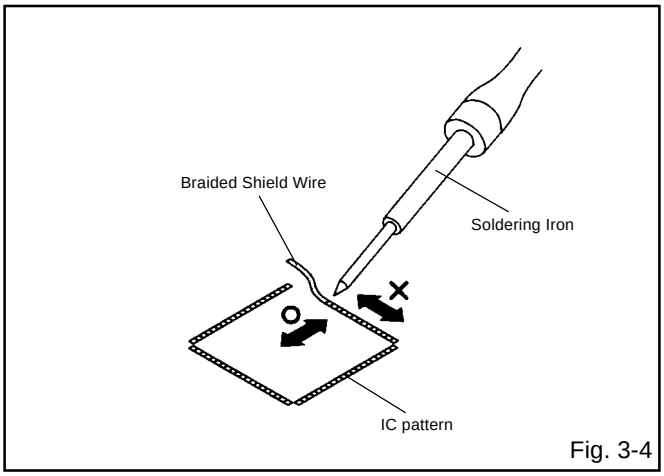


Fig. 3-4

DISASSEMBLY INSTRUCTIONS

INSTALLATION

1. Take care of the polarity of new IC and then install the new IC fitting on the printed circuit pattern. Then solder each lead on the diagonal positions of IC temporarily. **(Refer to Fig. 3-5.)**

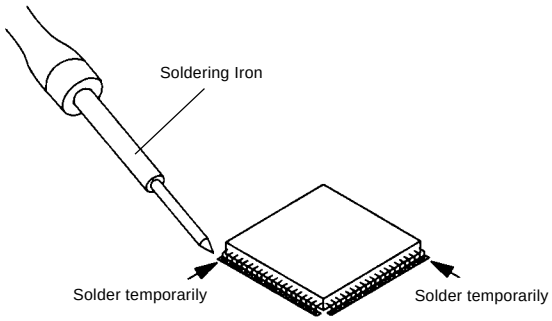


Fig. 3-5

2. Supply the solder from the upper position of IC leads sliding to the lower position of the IC leads. **(Refer to Fig. 3-6.)**

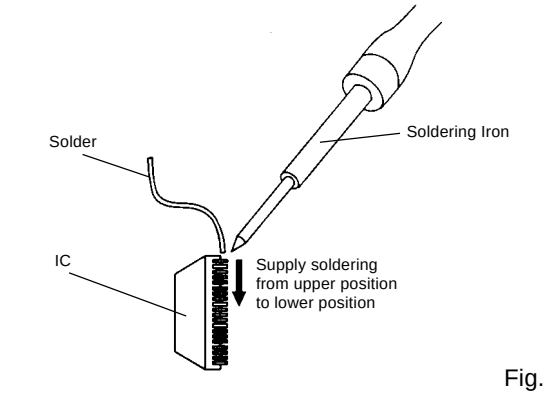


Fig. 3-6

3. Absorb the solder left on the lead using the Braided Shield Wire. **(Refer to Fig. 3-7.)**

   NOTE

   Do not absorb the solder to excess.

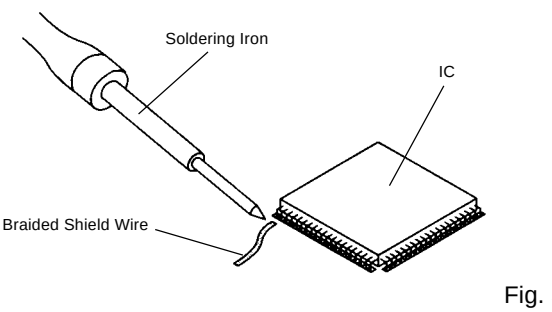


Fig. 3-7

4. When bridge-soldering between terminals and/or the soldering amount are not enough, resolder using a Thin-tip Soldering Iron. **(Refer to Fig. 3-8.)**

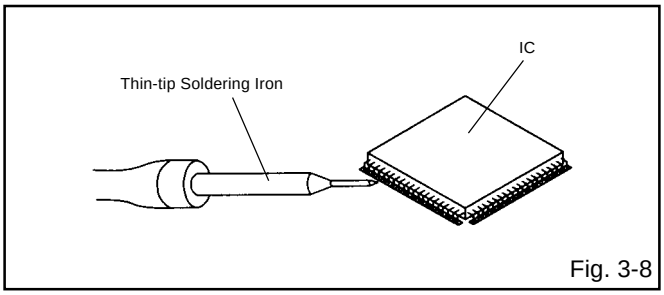


Fig. 3-8

5. Finally, confirm the soldering status on four sides of the IC using a magnifying glass.
   Confirm that no abnormality is found on the soldering position and installation position of the parts around the IC. If some abnormality is found, correct by resoldering.

   NOTE

   When the IC leads are bent during soldering and/or repairing, do not repair the bending of leads. If the bending of leads are repaired, the pattern may be damaged. So, be always sure to replace the IC in this case.

KEY TO ABBREVIATIONS

A	**A/C**	:	Audio/Control
	ACC	:	Automatic Color Control
	AE	:	Audio Erase
	AFC	:	Automatic Frequency Control
	AFT	:	Automatic Fine Tuning
	AFT DET	:	Automatic Fine Tuning Detect
	AGC	:	Automatic Gain Control
	AMP	:	Amplifier
	ANT	:	Antenna
	A.PB	:	Audio Playback
	APC	:	Automatic Phase Control
	ASS'Y	:	Assembly
	AT	:	All Time
	AUTO	:	Automatic
	A/V	:	Audio/Video
B	**BGP**	:	Burst Gate Pulse
	BOT	:	Beginning of Tape
	BPF	:	Bandpass Filter
	BRAKE SOL	:	Brake Solenoid
	BUFF	:	Buffer
	B/W	:	Black and White
C	**C**	:	Capacitance, Collector
	CASE	:	Cassette
	CAP	:	Capstan
	CARR	:	Carrier
	CH	:	Channel
	CLK	:	Clock
	CLOCK (SY-SE)	:	Clock (Syscon to Servo)
	COMB	:	Combination, Comb Filter
	CONV	:	Converter
	CPM	:	Capstan Motor
	CTL	:	Control
	CYL	:	Cylinder
	CYL-M	:	Cylinder-Motor
	CYL SENS	:	Cylinder-Sensor
D	**DATA (SY-CE)**	:	Data (Syscon to Servo)
	dB	:	Decibel
	DC	:	Direct Current
	DD Unit	:	Direct Drive Motor Unit
	DEMOD	:	Demodulator
	DET	:	Detector
	DEV	:	Deviation
E	**E**	:	Emitter
	EF	:	Emitter Follower
	EMPH	:	Emphasis
	ENC	:	Encoder
	ENV	:	Envelope
	EOT	:	End of Tape
	EQ	:	Equalizer
	EXT	:	External
F	**F**	:	Fuse
	FBC	:	Feed Back Clamp
	FE	:	Full Erase
	FF	:	Fast Forward, Flip-flop
	FG	:	Frequency Generator
	FL SW	:	Front Loading Switch
	FM	:	Frequency Modulation
	FSC	:	Frequency Sub Carrier
	FWD	:	Forward
G	**GEN**	:	Generator
	GND	:	Ground
H	**H.P.F**	:	High Pass Filter
	H.SW	:	Head Switch
	Hz	:	Hertz
I	**IC**	:	Integrated Circuit
	IF	:	Intermediate Frequency
	IND	:	Indicator
	INV	:	Inverter
K	**KIL**	:	Killer
L	**L**	:	Left
	LED	:	Light Emitting Diode
	LIMIT AMP	:	Limiter Amplifier
	LM, LDM	:	Loading Motor
	LP	:	Long Play
	L.P.F	:	Low Pass Filter
	LUMI.	:	Luminance
M	**M**	:	Motor
	MAX	:	Maximum
	MINI	:	Minimum
	MIX	:	Mixer, mixing
	MM	:	Monostable Multivibrator
	MOD	:	Modulator, Modulation
	MPX	:	Multiplexer, Multiplex
	MS SW	:	Mecha State Switch
N	**NC**	:	Non Connection
	NR	:	Noise Reduction
O	**OSC**	:	Oscillator
	OPE	:	Operation
P	**PB**	:	Playback
	PB CTL	:	Playback Control
	PB-C	:	Playback-Chrominance
	PB-Y	:	Playback-Luminance
	PCB	:	Printed Circuit Board
	P. CON	:	Power Control
	PD	:	Phase Detector
	PG	:	Pulse Generator
	P-P	:	Peak-to Peak
R	**R**	:	Right
	REC	:	Recording
	REC-C	:	Recording-Chrominance
	REC-Y	:	Recording-Luminance
	REEL BRK	:	Reel Brake
	REEL S	:	Reel Sensor
	REF	:	Reference
	REG	:	Regulated, Regulator
	REW	:	Rewind
	REV, RVS	:	Reverse
	RF	:	Radio Frequency
	RMC	:	Remote Control
	RY	:	Relay
S	**S. CLK**	:	Serial Clock
	S. COM	:	Sensor Common
	S. DATA	:	Serial Data
	SEG	:	Segment
	SEL	:	Select, Selector
	SENS	:	Sensor
	SER	:	Search Mode
	SI	:	Serial Input
	SIF	:	Sound Intermediate Frequency
	SO	:	Serial Output
	SOL	:	Solenoid
	SP	:	Standard Play

KEY TO ABBREVIATIONS

S	**STB**	:	Serial Strobe
	SW	:	Switch
	SYNC	:	Synchronization
	SYNC SEP	:	Sync Separator, Separation
T	**TR**	:	Transistor
	TRAC	:	Tracking
	TRICK PB	:	Trick Playback
	TP	:	Test Point
U	**UNREG**	:	Unregulated
V	**V**	:	Volt
	VCO	:	Voltage Controlled Oscillator
	VIF	:	Video Intermediate Frequency
	VP	:	Vertical Pulse, Voltage Display
	V.PB	:	Video Playback
	VR	:	Variable Resistor
	V.REC	:	Video Recording
	VSF	:	Visual Search Fast Forward
	VSR	:	Visual Search Rewind
	VSS	:	Voltage Super Source
	V-SYNC	:	Vertical-Synchronization
	VT	:	Voltage Tuning
X	**X'TAL**	:	Crystal
Y	**Y/C**	:	Luminance/Chrominance

SERVICE MODE LIST

This unit provided with the following SERVICE MODES so you can repair, examine and adjust easily.

To enter to the SERVICE MODE function, press and hold both buttons simultaneously on the main unit or on the main unit and on the remote control for more than a standard time (second).

Set Key	Set Key	Standard Time (seconds)	Operations
CH UP	FF	2	PLAY/REC total hours are displayed on the screen. Refer to the “PREVENTIVE CHECKS AND SERVICE INTERVALS” (CONFIRMATION OF HOURS USED). Can be checked of the INITIAL DATA of MEMORY IC. Refer to the “WHEN REPLACING EEPROM (MEMORY) IC”.
CH UP	STOP	2	Adjust the PG SHIFTER automatically. Refer to the “ELECTRICAL ADJUSTMENT” (PG SHIFTER).
CH UP	PLAY	2	Initialization of the factory on VCR. NOTE: Do not use this for the normal servicing. If you set a factory initialization, the memories are reset such as the clock setting, the channel setting, and PLAY/REC total hours.
CH DOWN	POWER	2	VCR operation mode at no connection of DVD. Refer to the “PREPARATION FOR SERVICING” NOTE: Although the DVD is connected, the DVD mode cannot be selected.

Set Key	Remocon Key	Standard Time (seconds)	Operations
REC	4	2	Initialization of the factory on DVD. NOTE: Do not use this for the normal servicing. The function will only work without the setting of DVD disc at DVD mode. While pressing the Remocon Key for more than the Standard Time, press the Set Key simultaneously.
REC	6	2	DVD Write mode. Refer to the “RE-WRITE FOR DVD FIRMWARE”. NOTE: Do not use this for the normal servicing. The function will only work at the DVD stop mode.
STOP	1	3	Check for the firmware version. Refer to the “RE-WRITE FOR DVD FIRMWARE”. NOTE: Do not use this for the normal servicing. The function will only work at the DVD stop mode.

Method	Operations
Press the ATR button on the remote control for more than 2 seconds during PLAY.	Adjusting of the Tracking to the center position. Refer to the “MECHANICAL ADJUSTMENT” (GUIDE ROLLER) and “ELECTRICAL ADJUSTMENT” (PG SHIFTER).
Make the short circuit between the test point of SERVICE and the GND.	The BOT, EOT, and the Reel Sensor do not work and the VCR deck can be operated without a cassette tape. Refer to the “PREPARATION FOR SERVICING”

PREVENTIVE CHECKS AND SERVICE INTERVALS

The following standard table depends on environmental conditions and usage.
Parts replacing time does not mean the life span for individual parts.
Also, long term storage or misuse may cause transformation and aging of rubber parts.
The following list means standard hours, so the checking hours depends on the conditions.

Time / Parts Name	500 hours	1,000 hours	1,500 hours	2,000 hours	2,500 hours	Notes
Audio Control Head	■	■	■	●	●	Clean those parts in contact with the tape.
Full Erase Head (Recorder only)	■	■	■	●	●	
Capstan Belt		●	●	●	●	Clean the rubber, and parts which the rubber touches.
Pinch Roller	■	●	●	●	●	
Capstan DD Unit		●	●	●	●	
Loading Motor					●	
Tension Band		●	●	●	●	
T Brake Band		●	●	●	●	
Clutch Ass'y		●	●	●	●	
Idler Arm Ass'y		●	●	●	●	
Capstan Shaft	■	■	■	■	■	
Tape Running Guide Post	■	■	■	■	■	Replace when rolling becomes abnormal.
Cylinder Unit	■	●	●	●	●	Clean the Head

■ : Clean
● : Check it and if necessary, replace it.

CONFIRMATION OF HOURS USED

PLAY/REC total hours can be checked on the screen.
Total hours are displayed in 16 system of notation.

NOTE: If you set a factory initialization, the total hours is reset to "0".

1. Connect the set to TV Monitor.
2. Turn on the POWER.
3. Press both CH UP button on the set and the FF button on the set for more than 2 seconds.
   The **Fig. 1** screen will appear on TV Monitor.
4. After the confirmation of using hours, turn off the power.

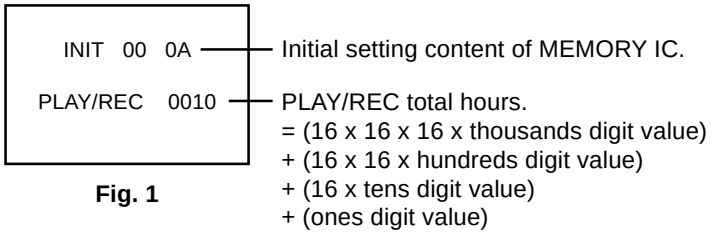

INIT 00 0A
Initial setting content of MEMORY IC.
PLAY/REC 0010
PLAY/REC total hours.
= (16 x 16 x 16 x thousands digit value)
+ (16 x 16 x hundreds digit value)
+ (16 x tens digit value)
+ (ones digit value)

Fig. 1

PREVENTIVE CHECKS AND SERVICE INTERVALS

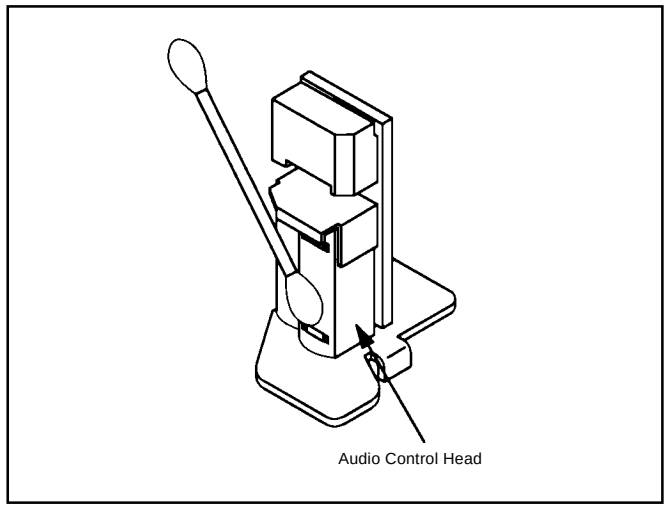
CLEANING

NOTE

After cleaning the heads with isopropyl alcohol, do not run a tape until the heads dry completely. If the heads are not completely dry and alcohol gets on the tape, damage may occur.

1. AUDIO CONTROL HEAD

Clean the Audio Control Head with the cotton stick soaked by alcohol. Clean the full erase head in the same manner. **(Refer to the figure below.)**



2. TAPE RUNNING SYSTEM

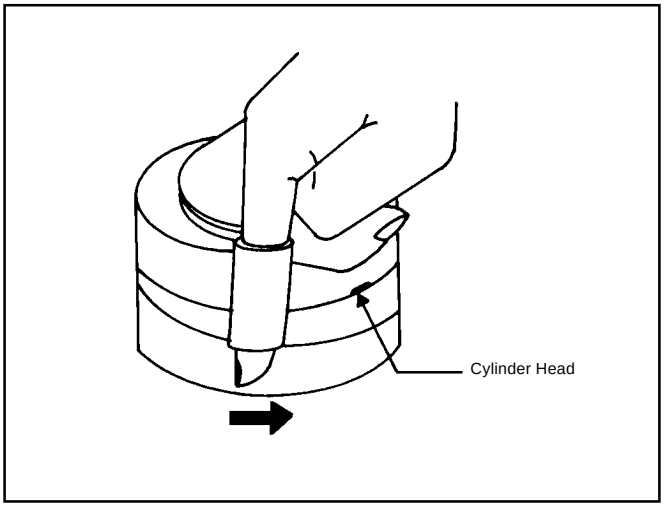
When cleaning the tape transport system, use the gauze moistened with isopropyl alcohol.

3. CYLINDER

Wrap a piece of chamois around your finger. Dip it in isopropyl alcohol. Hold it to the cylinder head softly. Turn the cylinder head counterclockwise to clean it (in the direction of the arrow). **(Refer to the figure below.)**

NOTE

Do not exert force against the cylinder head. Do not move the chamois upward or downward on the head.
Use the chamois one by one.



RE-WRITE FOR DVD FIRMWARE

1. Turn on the power, and set the DVD mode.

2. Open the DVD tray.

3. Press both Channel button **(6)** on the remote control and the REC button on the set for more than 2 seconds.

4. Press OPEN/CLOSE button on the unit to check if all the keys on the unit do not function.
   NOTE: To check if DVD Write mode is set.
   When inserting Up-Date Disc at Non DVD Write mode, the read error will happen.

5. Place the Up-Date Disc and close the tray by hand. **(Refer to SERVICING FIXTURE AND TOOLS)**

6. Automatic read will start and "CD-R UPDATE PROCESS" will be displayed on the screen.
   At this time, the horizontal noise lines may appear. But no problem.

7. Approxi. 20 seconds later, the tray will open automatically. Remove the Up-Date Disc.

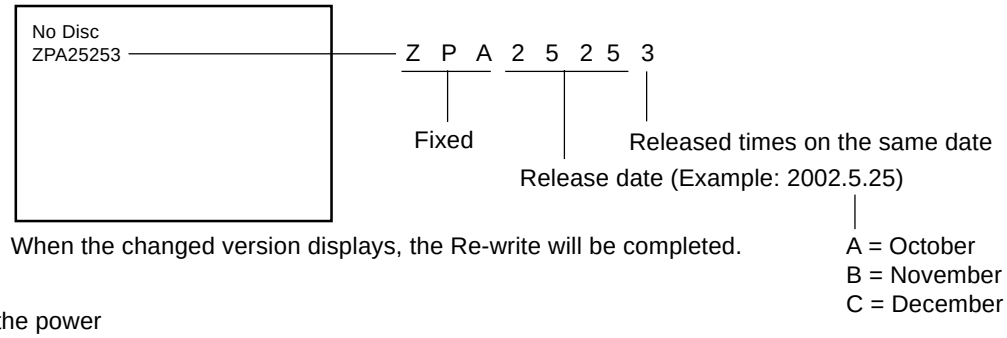
8. Then, Approxi. 40 seconds later, the above indication will disappear and the tray will close automatically.
   When the "No Disc" appears on the screen, the write will end.
   NOTE: Do not turn off the unit on the way or push the tray by hand to close it.
   Up-Date error will happen and can not be done with the Up-Date of Up-Date Disc.

9. Unplug the AC cord, then plug it in.

10. **After the write, set to the initializing of shipping.**
    Set to the DVD mode, press both Channel button **(4)** on the remote control and the REC button on the set for more than 2 seconds.

11. The "INITIALIZE 5 ---> COMPLETE" will appear on the screen.
    Then unplug the AC cord, and plug it in.

12. **CHECK FOR THE FIRMWARE VERSION**
    Set to the DVD mode, press both Channel button **(1)** on the remote control and the STOP button on the set for more than 3 seconds.
    Firmware version will be displayed on the top left of the screen.



When the changed version displays, the Re-write will be completed.

13. Turn off the power

WHEN REPLACING EEPROM (MEMORY) IC

If a service repair is undertaken where it has been required to change the MEMORY IC, the following steps should be taken to ensure correct data settings while making reference to TABLE 1.

NOTE: INI 34 and INI 35 cannot be set. Because, the total time for the PLAY/REC of the main unit is recorded.

INIT	+0	+1	+2	+3	+4	+5	+6	+7	+8	+9	+A	+B	+C	+D	+E	+F
00	0A	D2	9A	24	64	64	4A	A6	0B	2B	86	2F	8A	08	0A	0F
10	AF	97	95	8A	A0	55	31	04	88	A5	9F	3A	00	10	BF	00
20	29	02	00	71	60	31	29	04	00	00	00	25	A2	B0	00	---

Table 1

1. Connect the set to TV Monitor.
2. Turn on the POWER.
3. Press both CH UP button on the set and the FF button on the set for more than 2 seconds.
   ADDRESS and DATA will appear on TV Monitor as **Fig 1**.

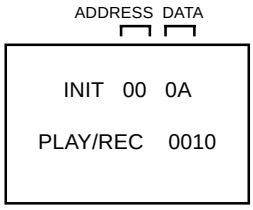


Fig. 1

4. ADDRESS is now selected and should “blink”. Using the SET + or - button on the remote, step through the ADDRESS until required ADDRESS to be changed is reached.
5. Press ENTER to select DATA. When DATA is selected, it will “blink”.
6. Again, step through the DATA using SET + or - button until required DATA value has been selected.
7. Pressing ENTER will take you back to ADDRESS for further selection if necessary.
8. Repeat steps 4 to 7 until all data has been checked.
9. When satisfied correct DATA has been entered, turn POWER off (return to STANDBY MODE) to finish DATA input.

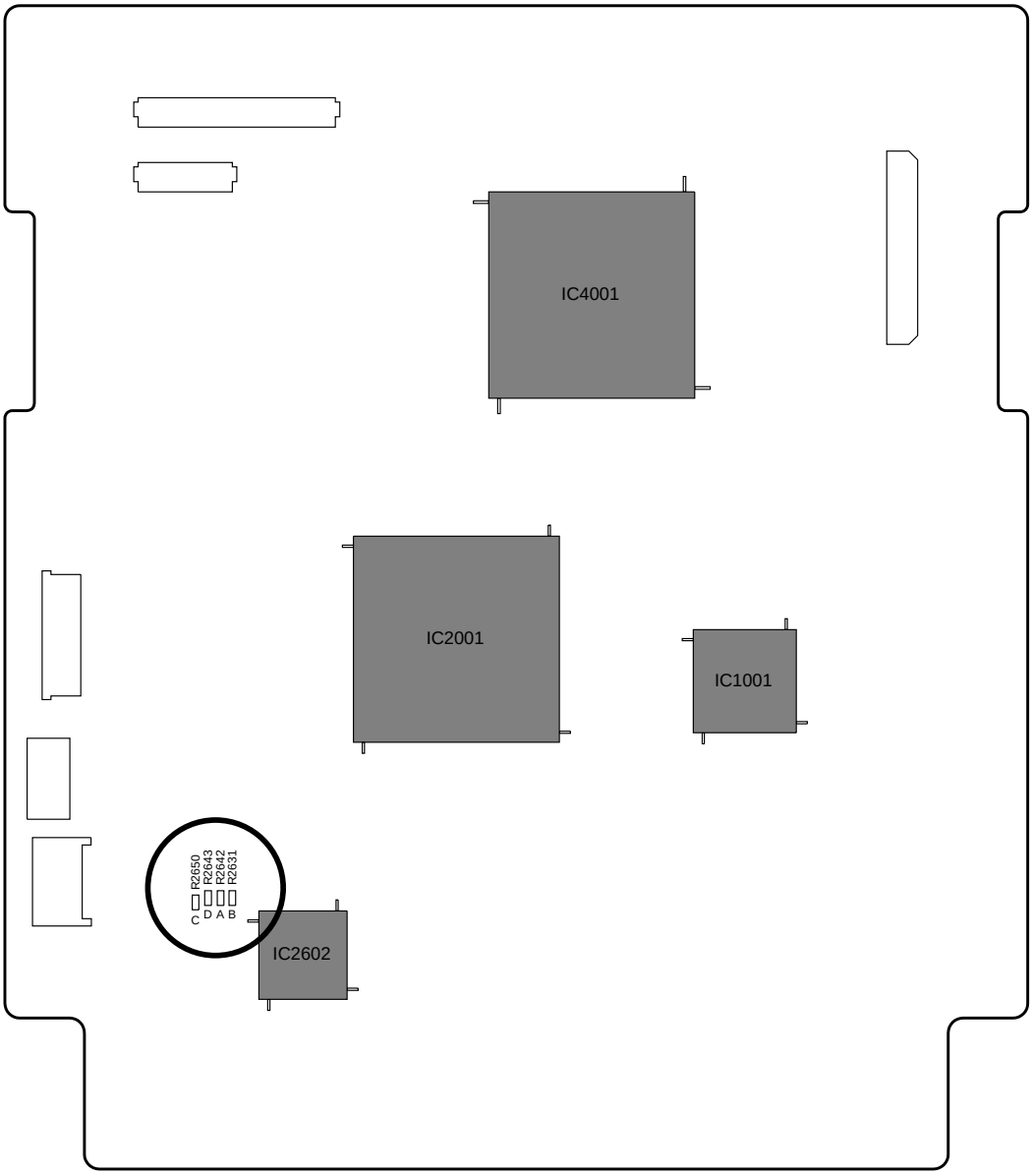
After the data input, set to the initializing of shipping.

10. Turn POWER on.
11. Press both CH UP button on the set and the PLAY button on the set for more than 2 seconds.
12. After the finishing of the initializing of shipping, the unit will turn off automatically.

The unit will now have the correct DATA for the new MEMORY IC.

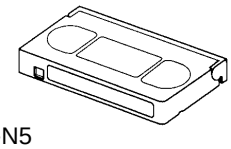
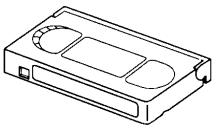
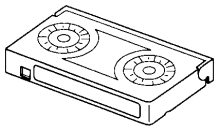
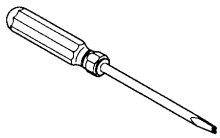
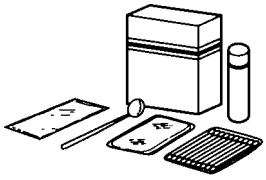
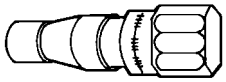
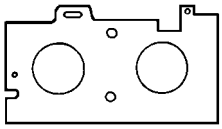
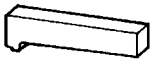
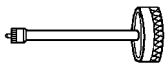
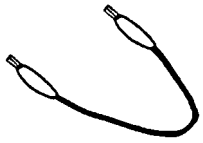
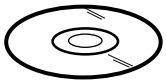
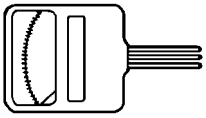
RF SIGNAL CHECK OF DVD PCB

RF signal check can be done at the following A~D resistance points on the DVD PCB.



DVD PCB

SERVICING FIXTURES AND TOOLS

Alignment Tape  ST-N5 ST-NF	Back tension cassette gauge  70909103	Torque cassette gauge (KT-300NR)  70909199	Taper nut driver  70909228
VTR cleaning kit 	VTR lubrication kit 	Grease 	JG002B Adapter JG002E Dial Torque Gauge (10~90gf•cm) JG002F (60~600gf•cm) 
JG022 Master Plane 	JG024A Reel Disk Height Adjustment Jig 	JG153 X Value Adjustment Screwdriver 	JG154 Cable 
JG176 Up-Date Disc 	Tentelometer 		

Ref. No.	Part No.	Parts Name	Remarks
JG002B	APJG002B00	Adapter	VSR Torque, Brake Torque (S Reel/T Reel Ass'y)
JG002E	APJG002E00	Dial Torque Gauge (10~90gf•cm)	Brake Torque (T Reel Ass'y)
JG002F	APJG002F00	Dial Torque Gauge (60~600gf•cm)	VSR Torque, Brake Torque (S Reel)
JG022	APJG022000	Master Plane	Reel Disk Height Adjustment
JG024A	APJG024A00	Reel Disk Height Adjustment Jig	Reel Disk Height Adjustment
JG153	APJG153000	X Value Adjustment Screwdriver	X Value Adjustment
JG154	APJG154000	Cable	Used to connect the test point of SERVICE and GROUND
JG176	APJG176014	Up-Date Disc	Up-Date of the Firmware

PREPARATION FOR SERVICING

How to use the Servicing Fixture

1. Short circuit between **TP3001** and **Ground** with the cable JG154.
   (The BOT, EOT, and the Reel Sensor do not work and the VCR deck can be operated without a cassette tape.)
2. In case of using a cassette tape, press the EJECT button to insert or eject a cassette tape.
   Turn on the power and re-check the cable before checking the trouble points.

When you servicing without the connection of DVD, perform the following operations before step 1.

While pressing the POWER button on the set for more than 2 seconds, press the CH DOWN button on the set simultaneously at the Power OFF. Although the DVD is connected, the DVD mode cannot be selected.

MECHANICAL ADJUSTMENTS

1. CONFIRMATION AND ADJUSTMENT

Read the following NOTES before starting work.

- Place an object which weighs between 450g~500g on the Cassette Tape to keep it steady when you want to make the tape run without the Cassette Holder. (Do not place an object which weighs over 500g.)

1-1: CONFIRMATION AND ADJUSTMENT OF REEL DISK HEIGHT

1. Turn on the power and set to the STOP mode.
2. Set the master plane **(JG022)** and reel disk height adjustment jig **(JG024A)** on the mechanism framework, taking care not to scratch the drum, as shown in **Fig. 1-1-A**.
3. While turning the reel and confirm the following points. Check if the surface "A" of reel disk is lower than the surface "B" of reel disk height adjustment jig **(JG024A)** and is higher than the surface "C". If it is not passed, place the height adjustment washers and adjust to 10(+2, -0)mm.
4. Adjust the other reel in the same way.

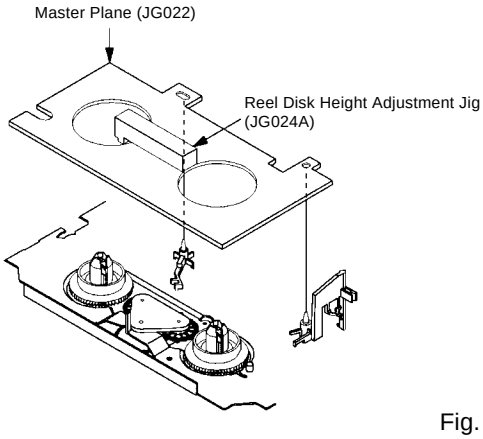


Fig. 1-1-A

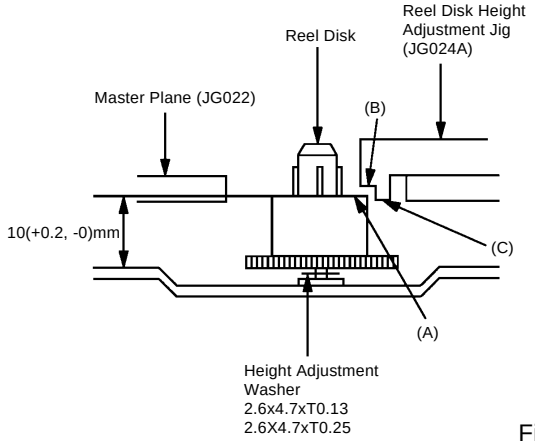


Fig. 1-1-B

1-2: CONFIRMATION AND ADJUSTMENT OF TENSION POST POSITION

1. Set to the PLAY mode.
2. Adjust the adjusting section for the Tension Arm position so that the Tension Arm top is within the standard line of Main Chassis.
3. While turning the S Reel clockwise, confirm that the edge of the Tension Arm is located in the position described above.

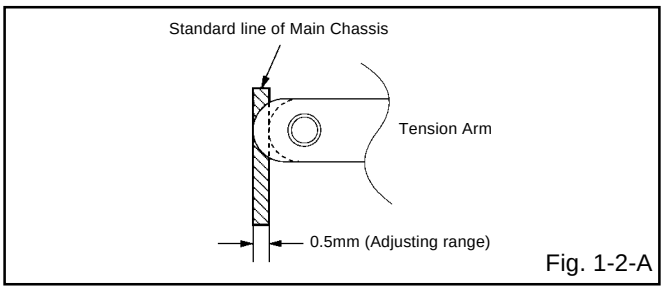


Fig. 1-2-A

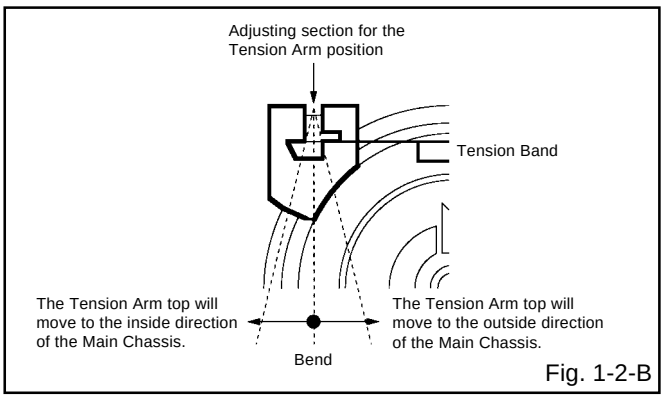


Fig. 1-2-B

1-3: CONFIRMATION OF PLAYBACK TORQUE AND BACK TENSION TORQUE DURING PLAYBACK

1. Load a video tape (T-120) recorded in standard speed mode. Set the unit to the PLAY mode.
2. Install the tentelometer as shown in **Fig. 1-3**. Confirm that the meter indicates 20 ± 2gf in the beginning of playback.

• USING A CASSETTE TYPE TORQUE TAPE **(KT-300NR)**

1. After confirmation and adjustment of Tension Post position **(Refer to item 1-2)**, load the cassette type torque tape **(KT-300NR)** and set to the PLAY mode.
2. Confirm that the right meter of the torque tape indicates 50~90gf•cm during playback in SP mode.
3. Confirm that the left meter of the torque tape indicates 25~40gf•cm during playback in SP mode.

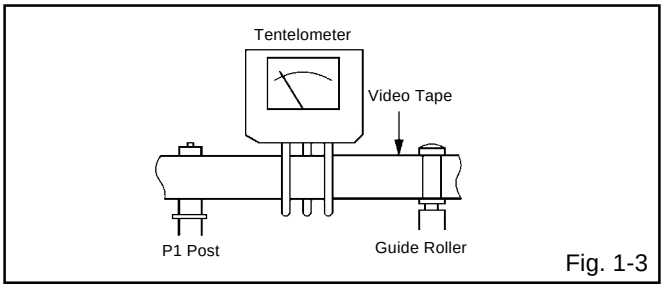


Fig. 1-3

MECHANICAL ADJUSTMENTS

1-4: CONFIRMATION OF VSR TORQUE

1. Install the Torque Gauge **(JG002F)** and Adapter **(JG002B)** on the S Reel. Set to the Picture Search (Rewind) mode. **(Refer to Fig.1-4-B)**
2. Then, confirm that it indicates 120~180gf•cm.

NOTE

Install the Torque Gauge on the reel disk firmly. Press the REW button to turn the reel disk.

1-5: CONFIRMATION OF REEL BRAKE TORQUE

(S Reel Brake) **(Refer to Fig. 1-4-B)**

1. Once set to the Fast Forward mode then set to the Stop mode. While, unplug the AC cord when the Pinch Roller Block is on the position of **Fig. 1-4-A**.
2. Move the Idler Ass'y from the S Reel.
3. Install the Torque Gauge **(JG002F)** and Adapter **(JG002B)** on the S Reel. Turn the Torque Gauge **(JG002F)** clockwise.
4. Then, confirm that it indicates 60~100gf•cm.

(T Reel Brake) **(Refer to Fig. 1-4-B)**

1. Once set to the Fast Forward mode then set to the Stop mode. While, unplug the AC cord when the Pinch Roller Block is on the position of **Fig. 1-4-A**.
2. Move the Idler Ass'y from the T Reel.
3. Install the Torque Gauge **(JG002E)** and Adapter **(JG002B)** on the T reel. Turn the Torque Gauge **(JG002E)** counterclockwise.
4. Then, confirm that it indicates 30~50gf•cm.

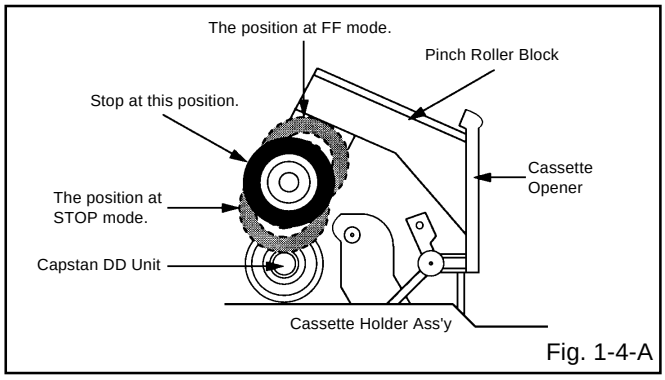


Fig. 1-4-A

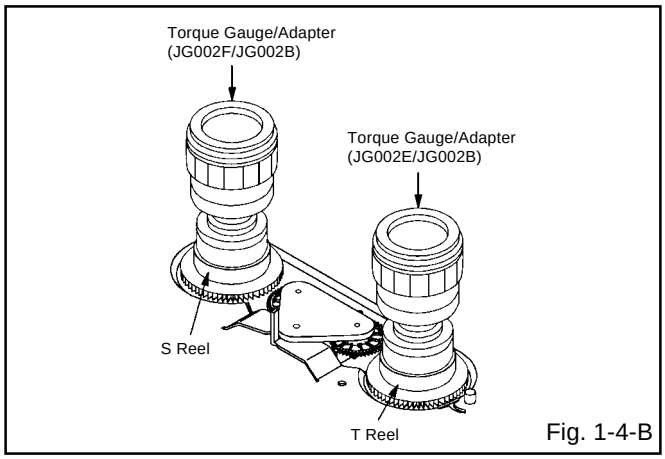


Fig. 1-4-B

NOTE

If the torque is out of the range, replace the following parts.

Check item	Replacement Part
1-4	Idler Ass'y/Clutch Ass'y
1-5	S Reel side: S Reel/Tension Band/Tension Connect/Tension Arm Ass'y T Reel side: T Reel/T Brake Band//T Brake Spring/T Brake Arm

2. CONFIRMATION AND ADJUSTMENT OF TAPE RUNNING MECHANISM

Tape Running Mechanism is adjusted precisely at the factory. Adjustment is not necessary as usual. When you replace the parts of the tape running mechanism because of long term usage or failure, the confirmation and adjustment are necessary.

2-1: GUIDE ROLLER

1. Playback the VHS Alignment Tape (Monoscope of ST-N5 MODE2).
2. Connect CH-1 of the oscilloscope to **TP101 (Envelope)** and CH-2 to **TP3002 (SW Pulse)**.
3. Trigger with SW Pulse and observe the envelope. **(Refer to Fig. 2-1-A)**
4. When observing the envelope, adjust the Taper Nut Driver slightly until the envelope will be flat.
   Even if you press the Tracking Button, adjust so that flatness is not moved so much.
5. Adjust so that the A : B ratio is better than 3 : 2 as shown in **Fig. 2-1-B**, even if you press the Tracking Button to move the envelope (The envelope waveform will begin to decrease when you press the Tracking Button).
6. Adjust the PG shifter during playback.
   (Refer to the ELECTRICAL ADJUSTMENTS)

NOTE

After adjustment, confirm and adjust A/C head.
(Refer to item 2-2)

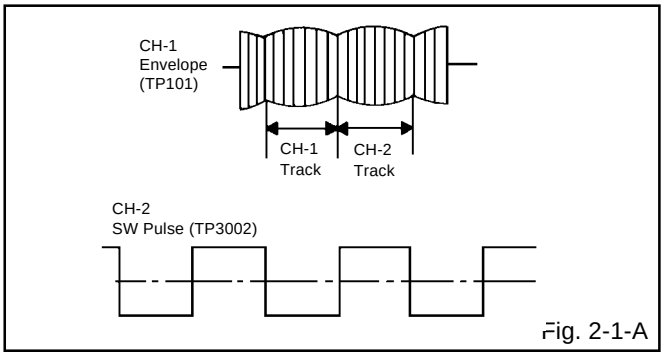


Fig. 2-1-A

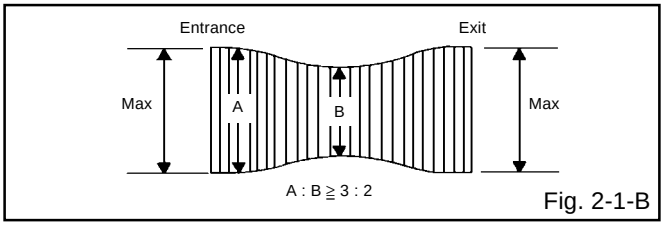


Fig. 2-1-B

MECHANICAL ADJUSTMENTS

2-2: CONFIRMATION AND ADJUSTMENT OF AUDIO/ CONTROL HEAD

When the Tape Running Mechanism does not work well, adjust the following items.

1. Playback the VHS Alignment Tape (Monoscope of ST-N5 MODE2).
2. Confirm that the reflected picture of stamp mark is appeared on the tape prior to P4 Cap as shown in **Fig. 2-2-A**.
   a) When the reflected picture is distorted, turn the screw ① clockwise until the distortion is disappeared.
   b) When the reflected picture is not distorted, turn the screw ① counterclockwise until little distortion is appeared, then adjust the a).
3. Turn the screw ② to set the audio level to maximum.
4. Confirm that the bottom of the Audio/ Control Head and the bottom of the tape is shown in **Fig. 2-2-C**.
   c) When the height is not correct, turn the screw ③ to adjust the height. Then, adjust the 1~3 again.

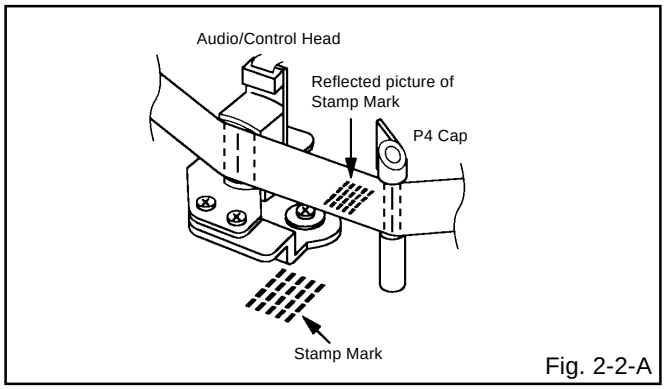


Fig. 2-2-A

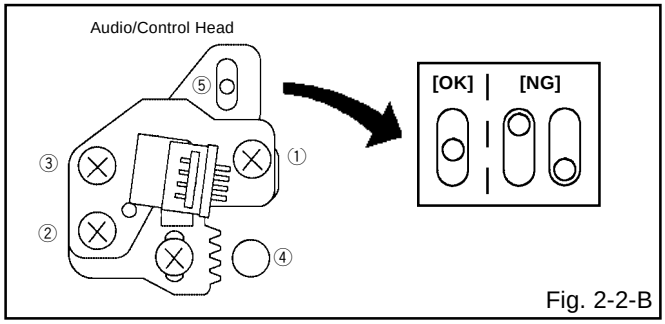


Fig. 2-2-B

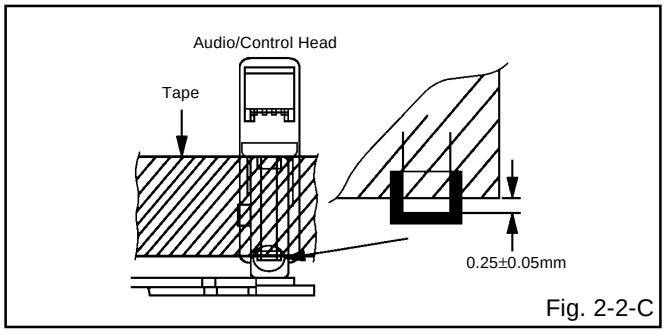


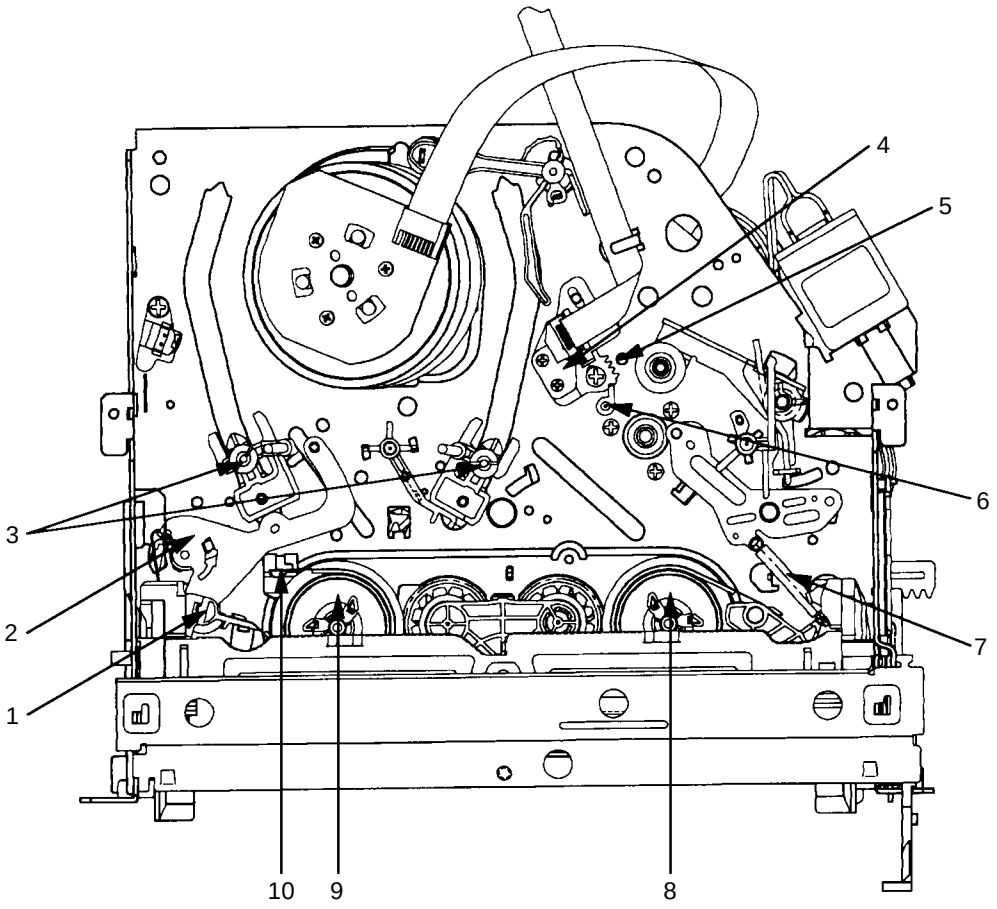
Fig. 2-2-C

2-3: TAPE RUNNING ADJUSTMENT (X VALUE ADJUSTMENT)

1. Confirm and adjust the height of the Reel Disk. **(Refer to item 1-1)**
2. Confirm and adjust the position of the Tension Post. **(Refer to item 1-2)**
3. Adjust the Guide Roller. **(Refer to item 2-1)**
4. Confirm and adjust the Audio/Control Head. **(Refer to item 2-2)**
5. Connect CH-1 of the oscilloscope to **TP3002** and CH-2 to **TP101**.
6. Playback the VHS Alignment Tape (Monoscope of ST-N5 MODE2).
7. Press and hold the ATR button on the remote control more than 2 seconds to set tracking to center.
8. Set the X Value adjustment driver **(JG153)** to the ④ of **Fig. 2-2-B**. Adjust X value so that the envelope waveform output becomes maximum. Then, check if the ⑤ section of **Fig. 2-2-B** is on the center position (or rather to the cylinder side). In case of the envelope maximum at the difference position from the center, adjust the matching of picture and sound again.

MECHANICAL ADJUSTMENTS

3. MECHANISM ADJUSTMENT PARTS LOCATION GUIDE



1. Tension Connect
2. Tension Arm
3. Guide Roller
4. Audio/Control Head
5. X value adjustment driver hole
6. P4 Post
7. T Brake Spring
8. T Reel
9. S Reel
10. Adjusting section for the Tension Arm position

ELECTRICAL ADJUSTMENTS

Read and perform this adjustment when repairing the circuits or replacing electrical parts or PCB assemblies.

1. BASIC ADJUSTMENT

CAUTION

When you exchange IC and Transistor for a heat sink, apply the silicon grease on the contact section of the heat sink. Before applying new silicon grease, remove all the old silicon grease. (Old grease may cause damages to the IC and Transistor.)

1-1: PG SHIFTER

CONDITIONS

MODE-PLAYBACK
Input Signal-Alignment Tape

INSTRUCTIONS

1. Connect CH-1 on the oscilloscope to **TP3002** and CH-2 to **TP8001**.
2. Playback the alignment tape.
3. Press and hold the ATR button on the remote control more than 2 seconds to set tracking to center.
4. Press both CH UP button on the set and the STOP button on the set for more than 2 seconds.

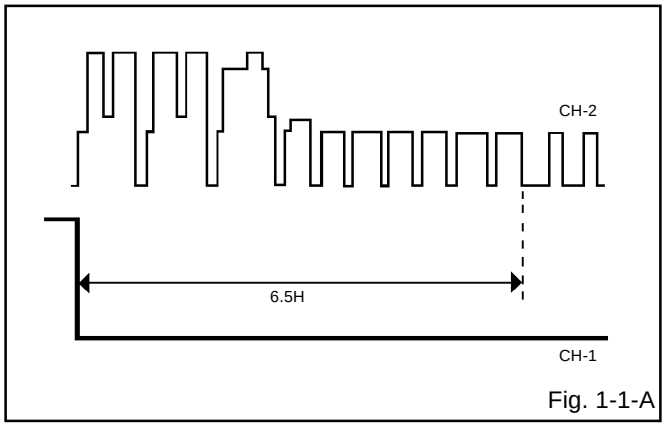


Fig. 1-1-A

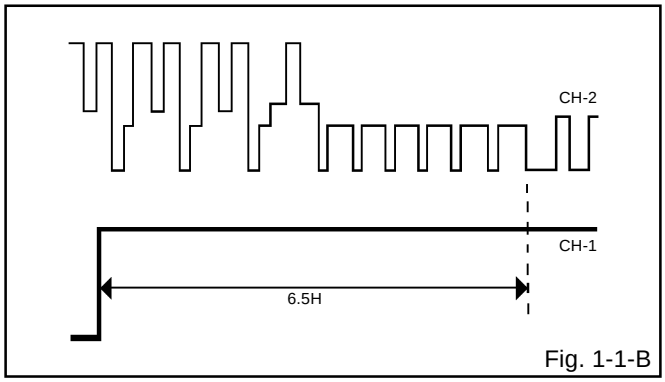
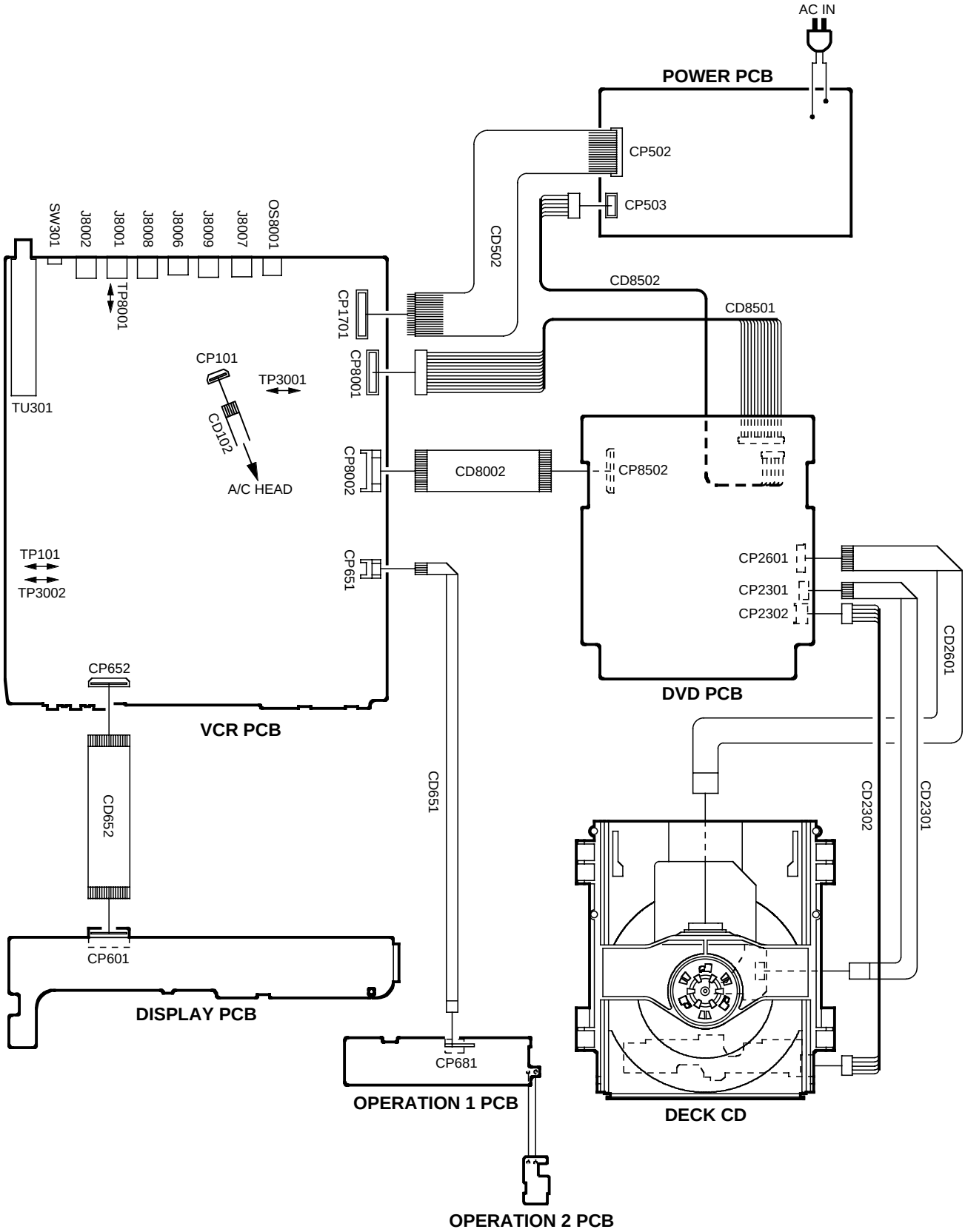


Fig. 1-1-B

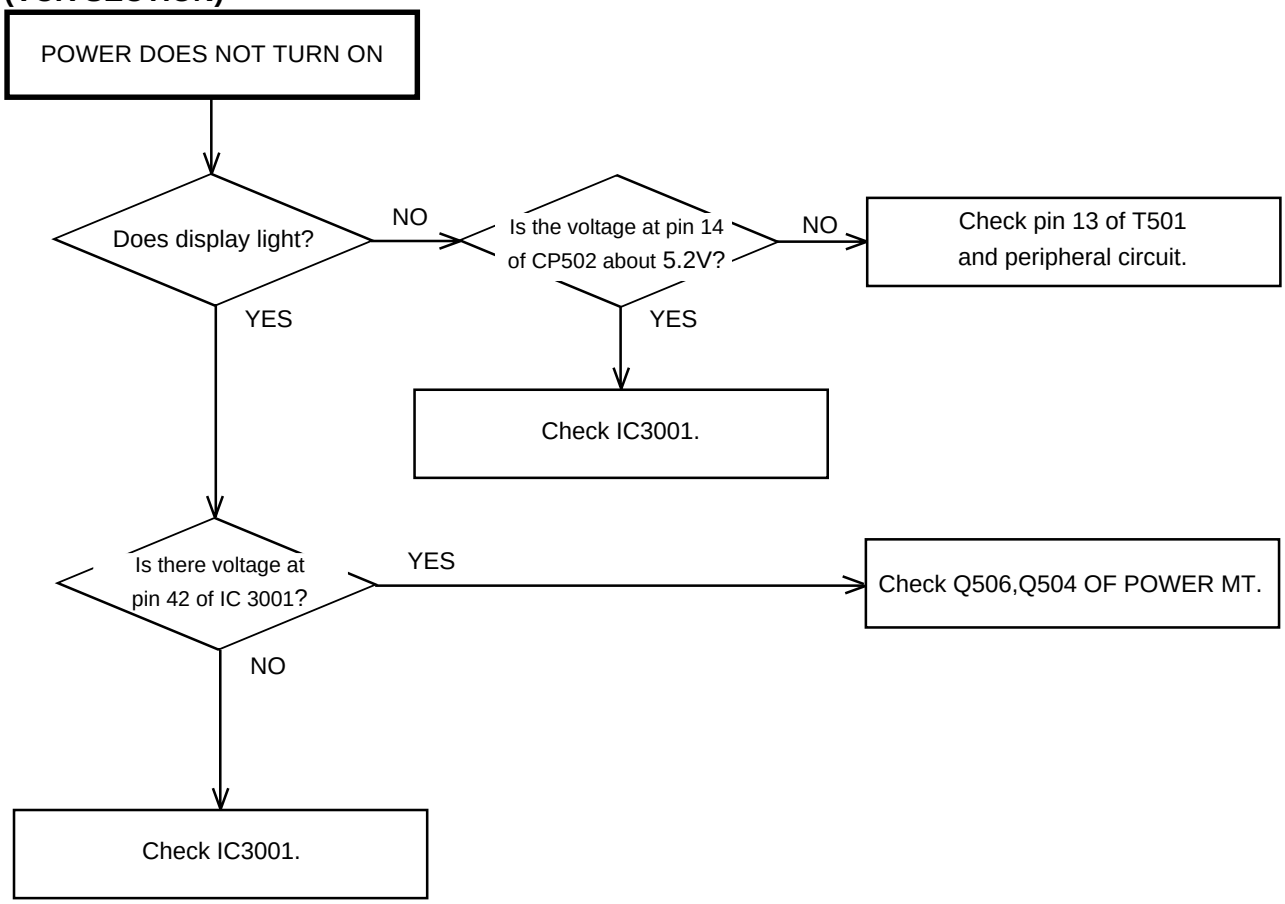
ELECTRICAL ADJUSTMENTS

2. ELECTRICAL ADJUSTMENT PARTS LOCATION GUIDE (WIRING CONNECTION)

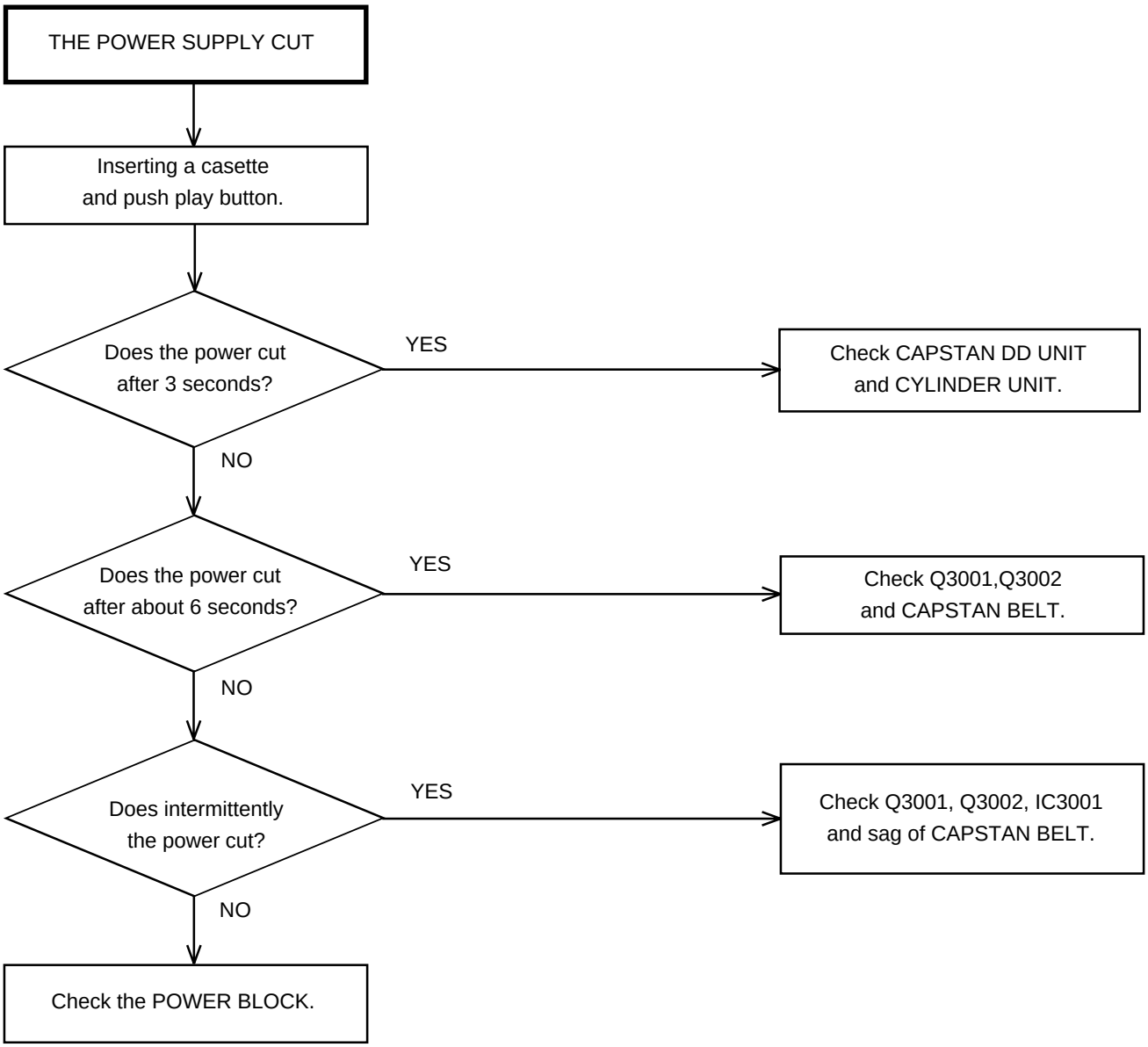


TROUBLESHOOTING GUIDE

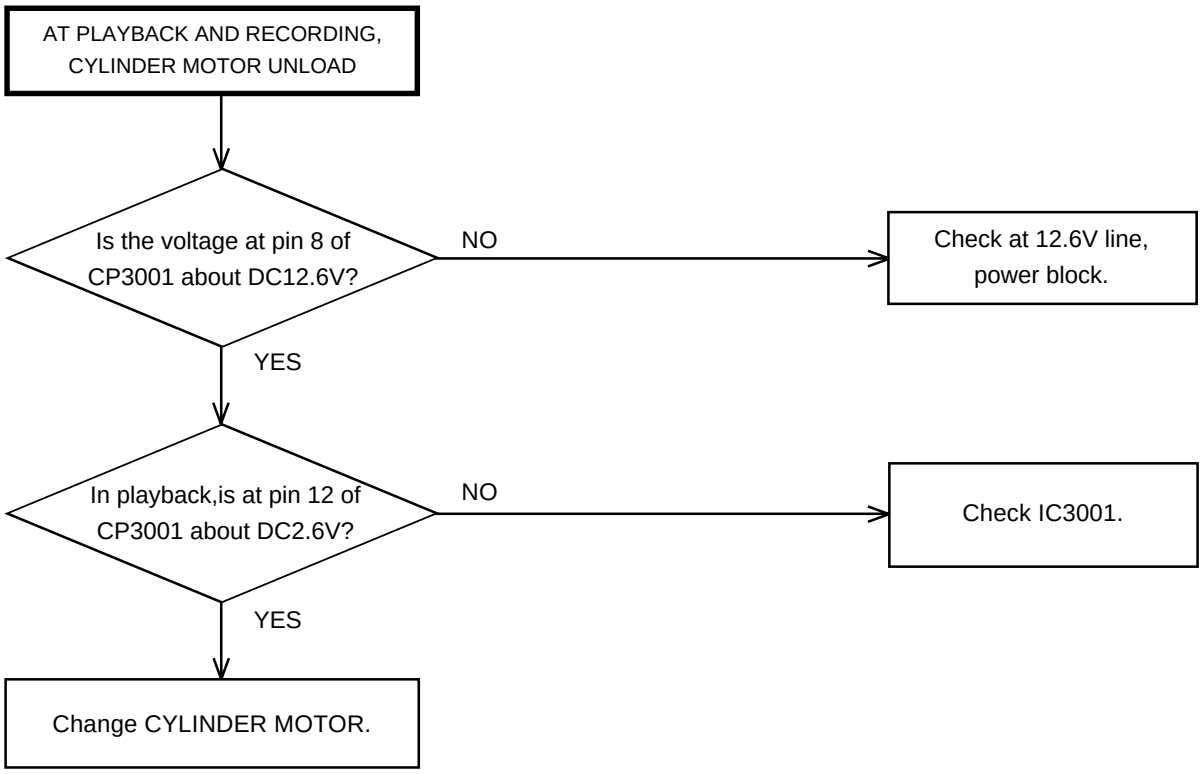
(VCR SECTION)



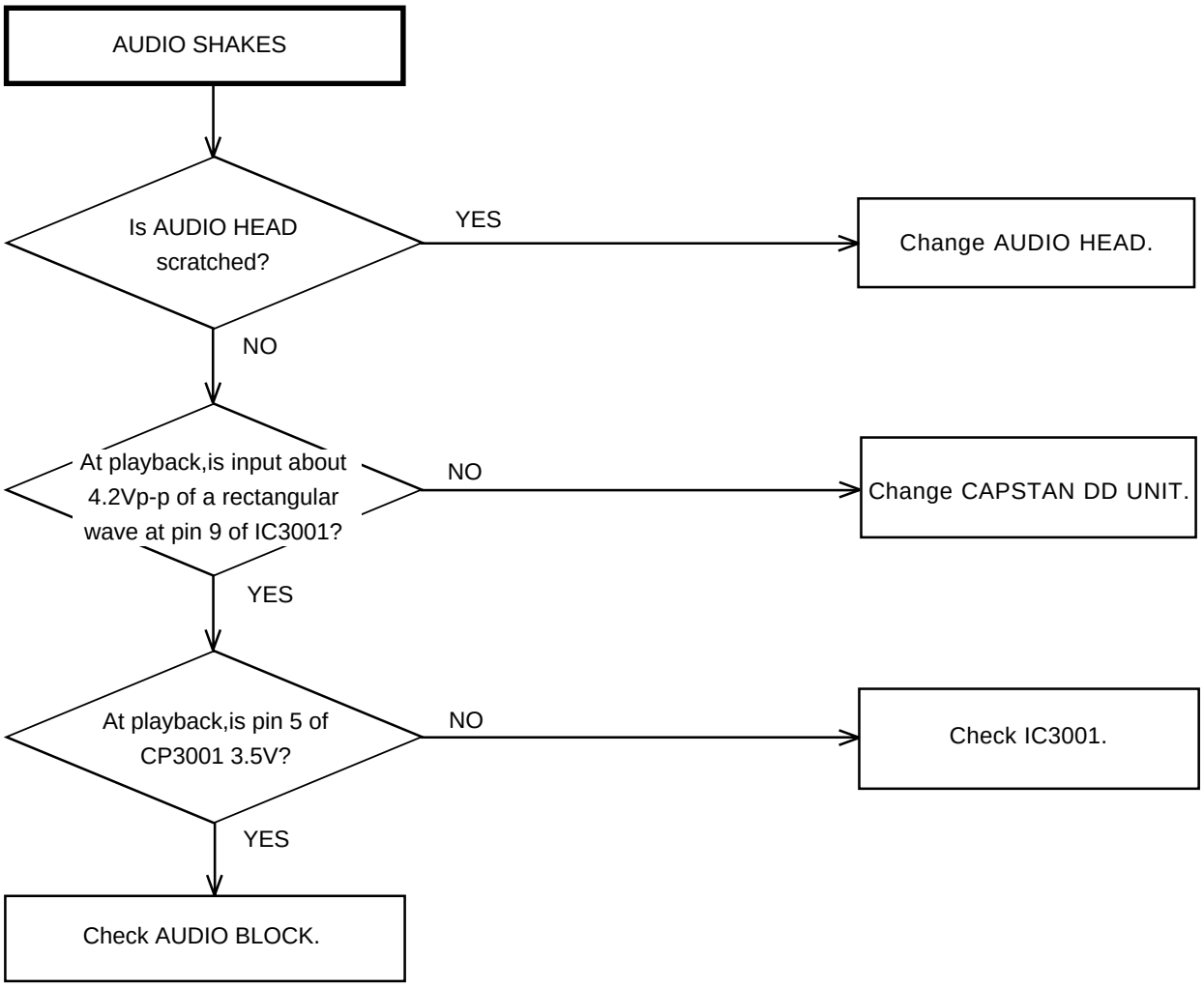
TROUBLESHOOTING GUIDE



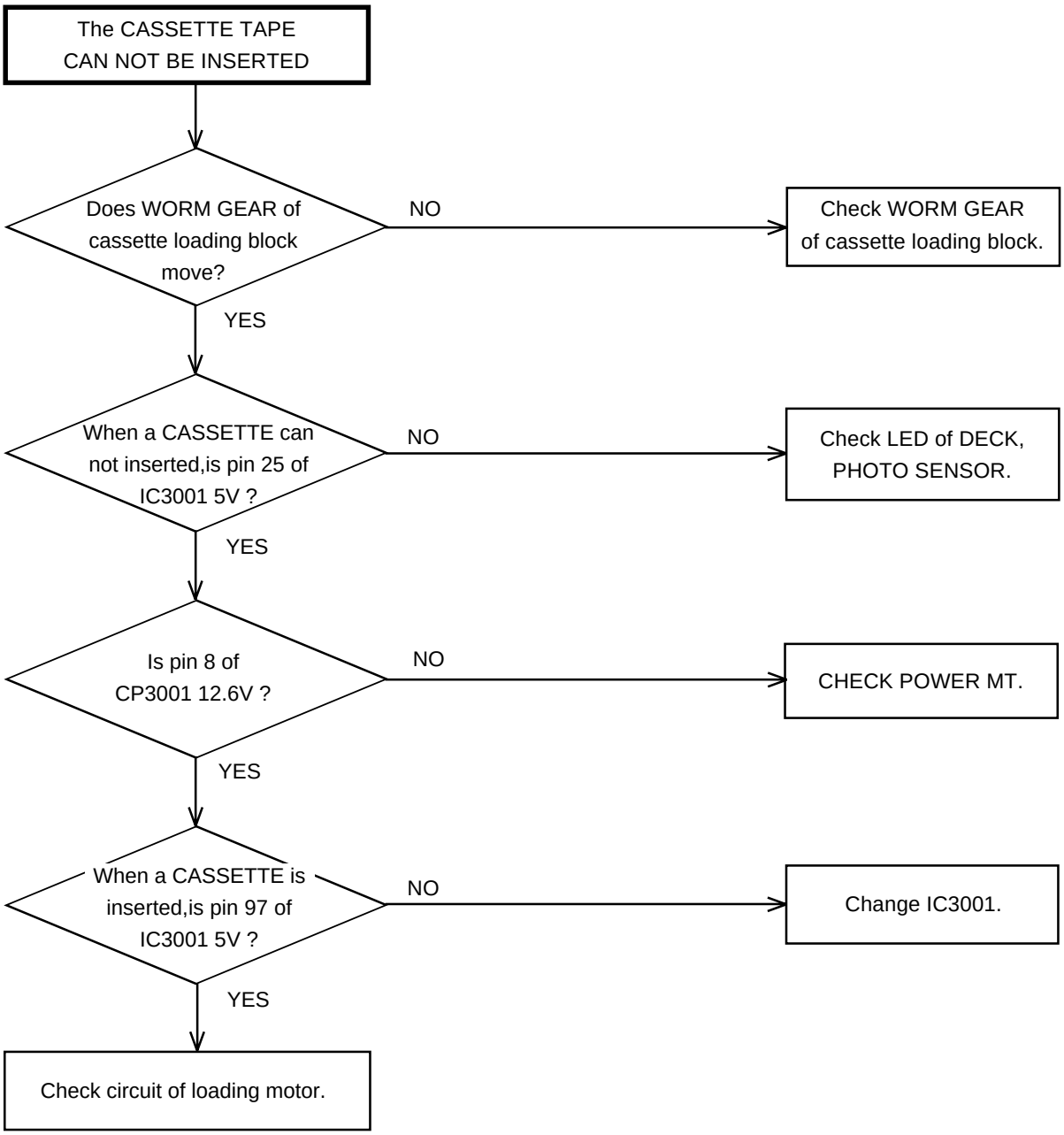
TROUBLESHOOTING GUIDE


AT PLAYBACK AND RECORDING, CYLINDER MOTOR UNLOAD
Is the voltage at pin 8 of CP3001 about DC12.6V?
NO
Check at 12.6V line, power block.
YES
In playback,is at pin 12 of CP3001 about DC2.6V?
NO
Check IC3001.
YES
Change CYLINDER MOTOR.

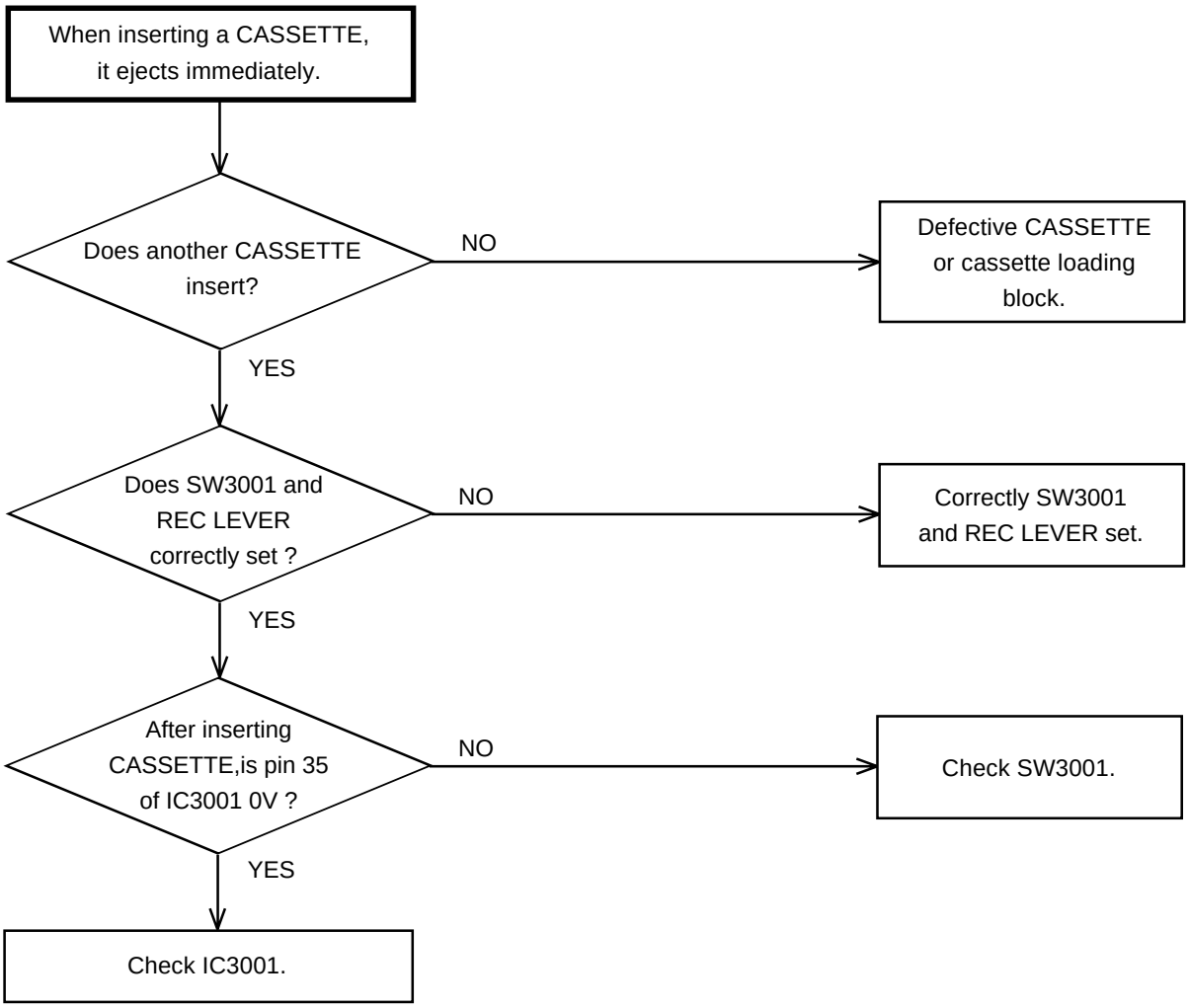
TROUBLESHOOTING GUIDE



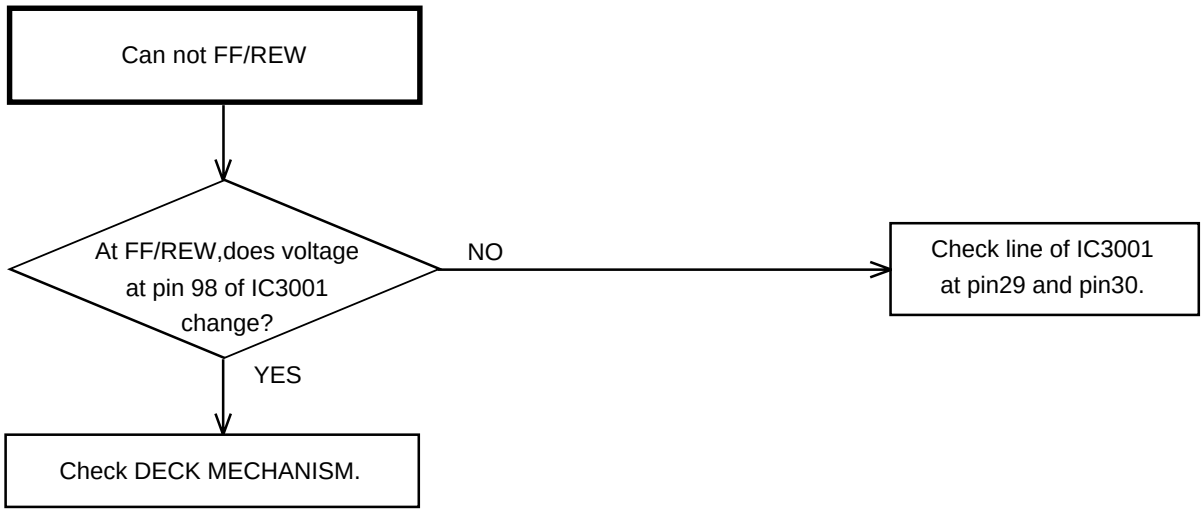
TROUBLESHOOTING GUIDE


The CASSETTE TAPE
CAN NOT BE INSERTED
Does WORM GEAR of cassette loading block move?
NO
Check WORM GEAR of cassette loading block.
YES
When a CASSETTE can not inserted,is pin 25 of IC3001 5V ?
NO
Check LED of DECK, PHOTO SENSOR.
YES
Is pin 8 of CP3001 12.6V ?
NO
CHECK POWER MT.
YES
When a CASSETTE is inserted,is pin 97 of IC3001 5V ?
NO
Change IC3001.
YES
Check circuit of loading motor.

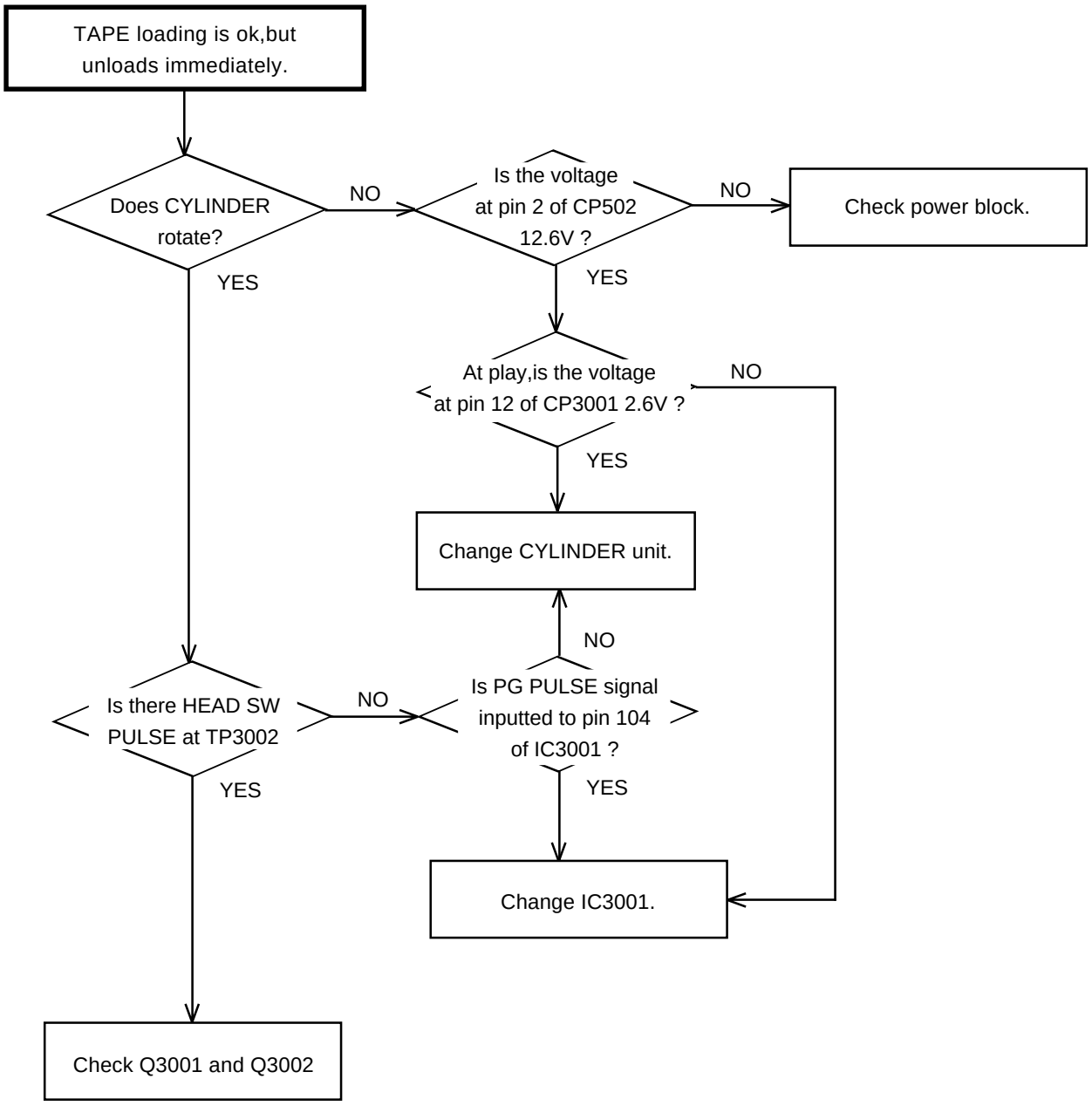
TROUBLESHOOTING GUIDE



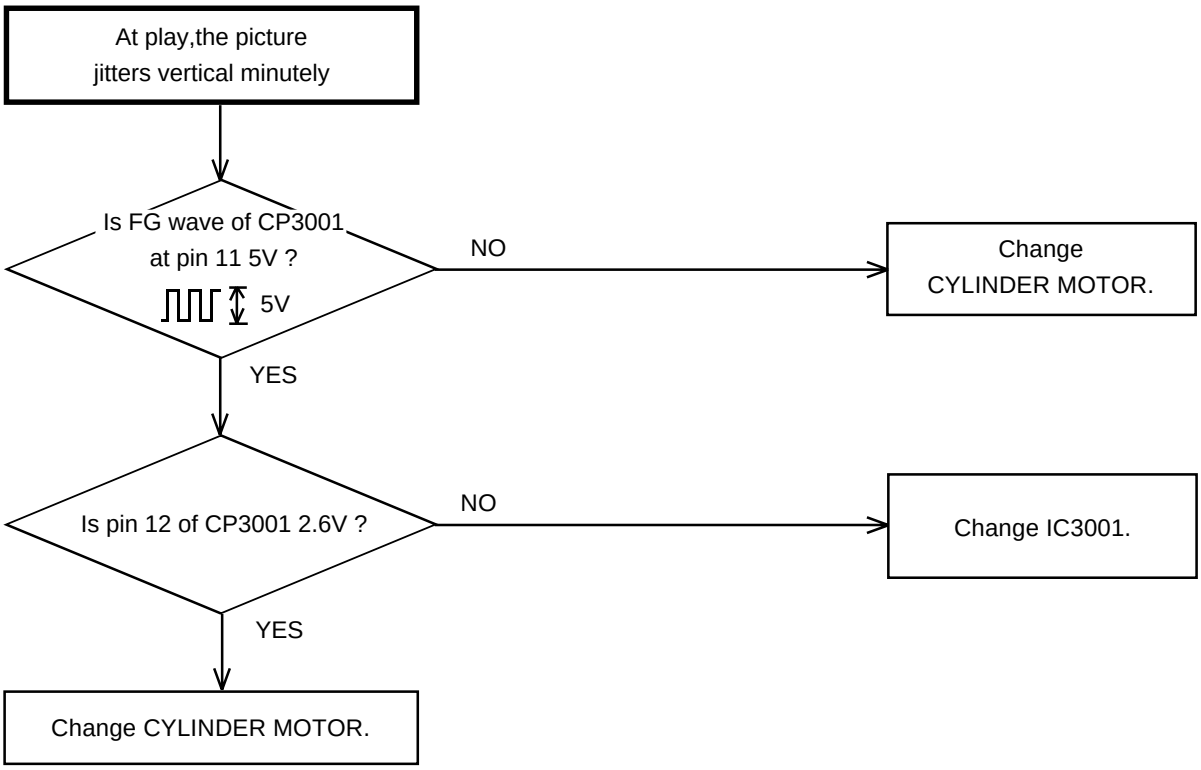
TROUBLESHOOTING GUIDE


Can not FF/REW
At FF/REW,does voltage at pin 98 of IC3001 change?
NO
Check line of IC3001 at pin29 and pin30.
YES
Check DECK MECHANISM.

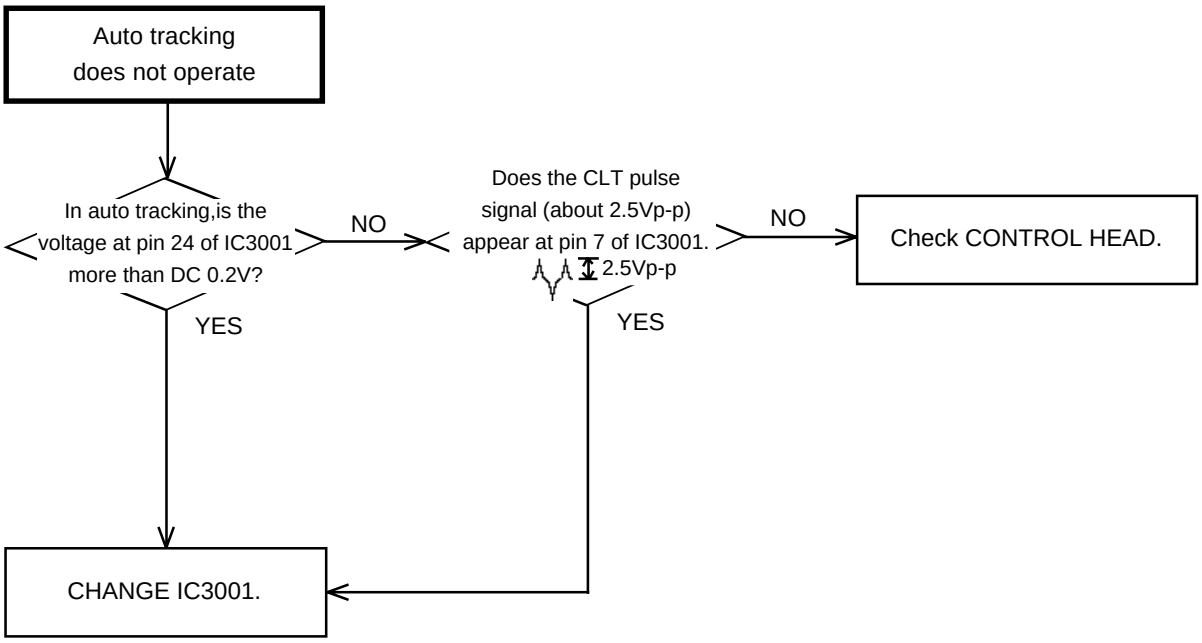
TROUBLESHOOTING GUIDE



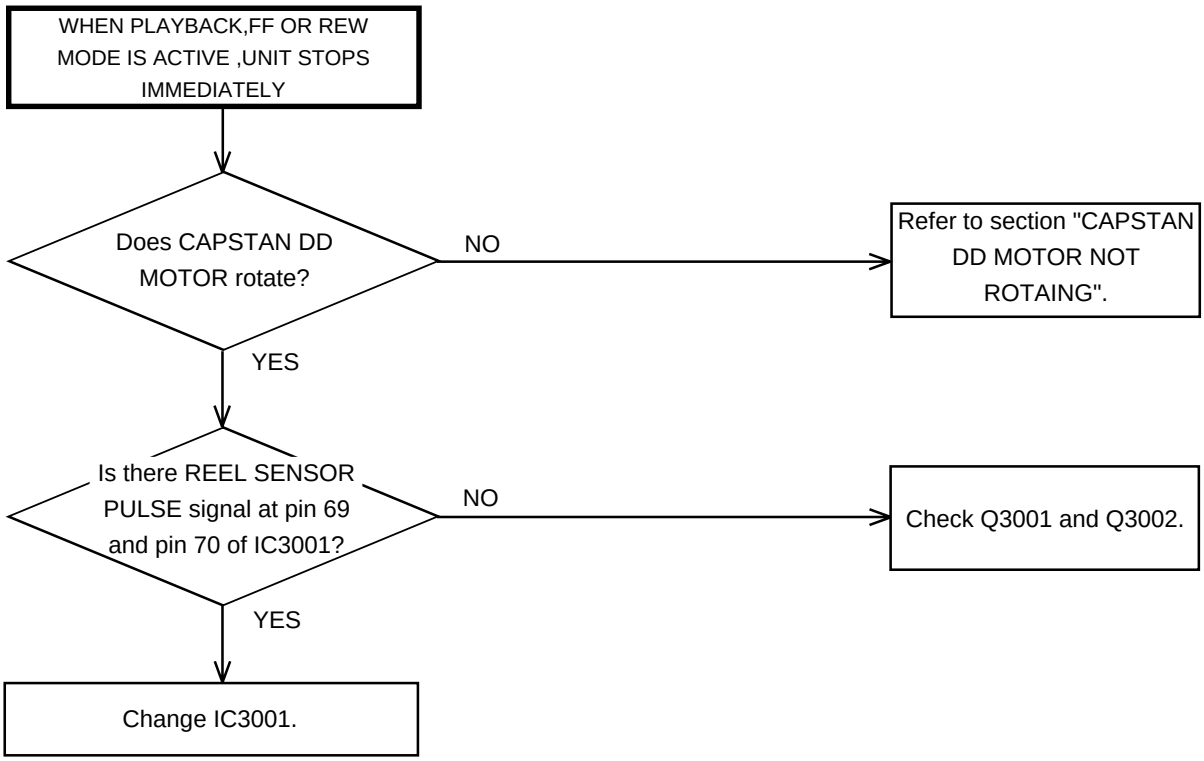
TROUBLESHOOTING GUIDE



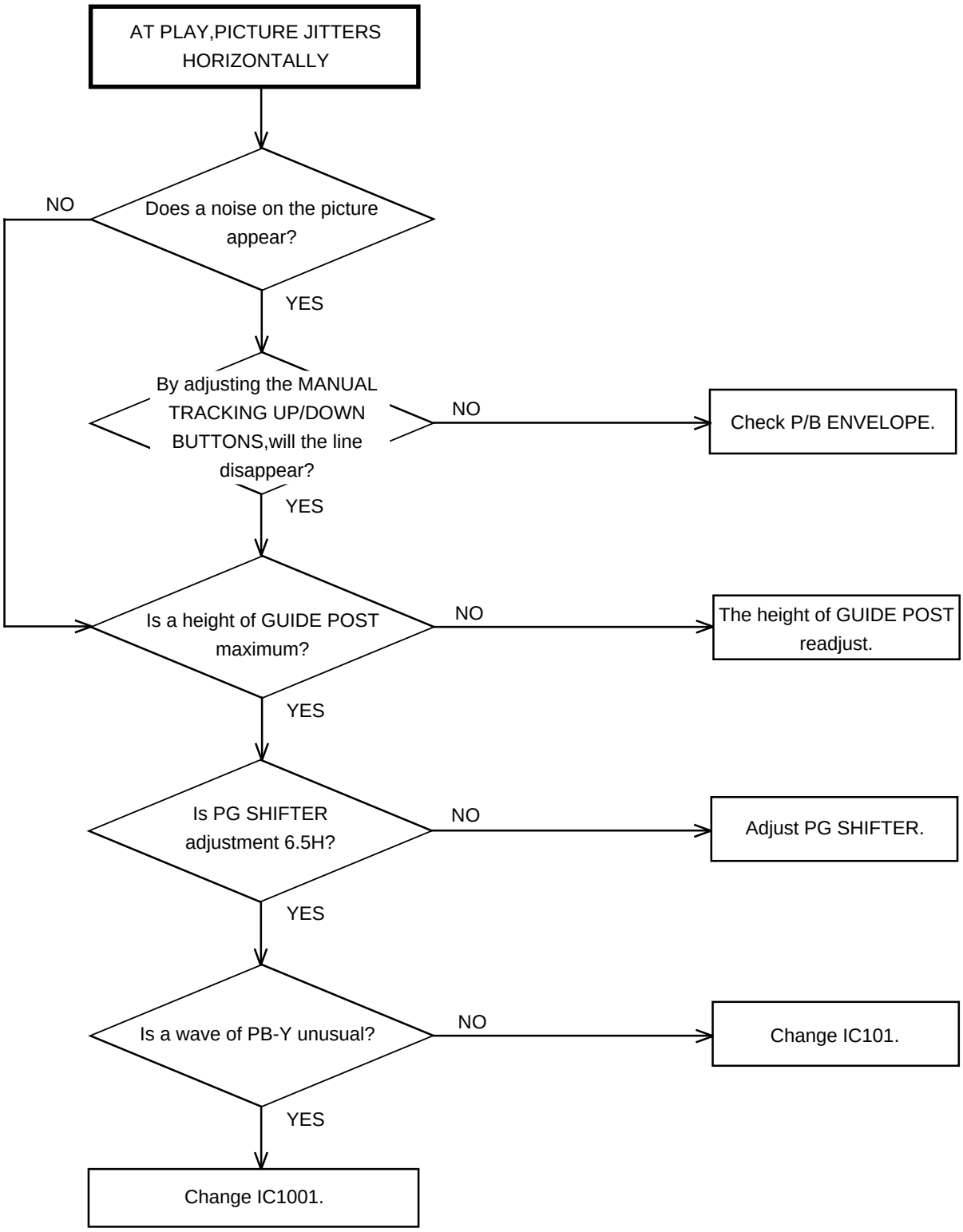
TROUBLESHOOTING GUIDE



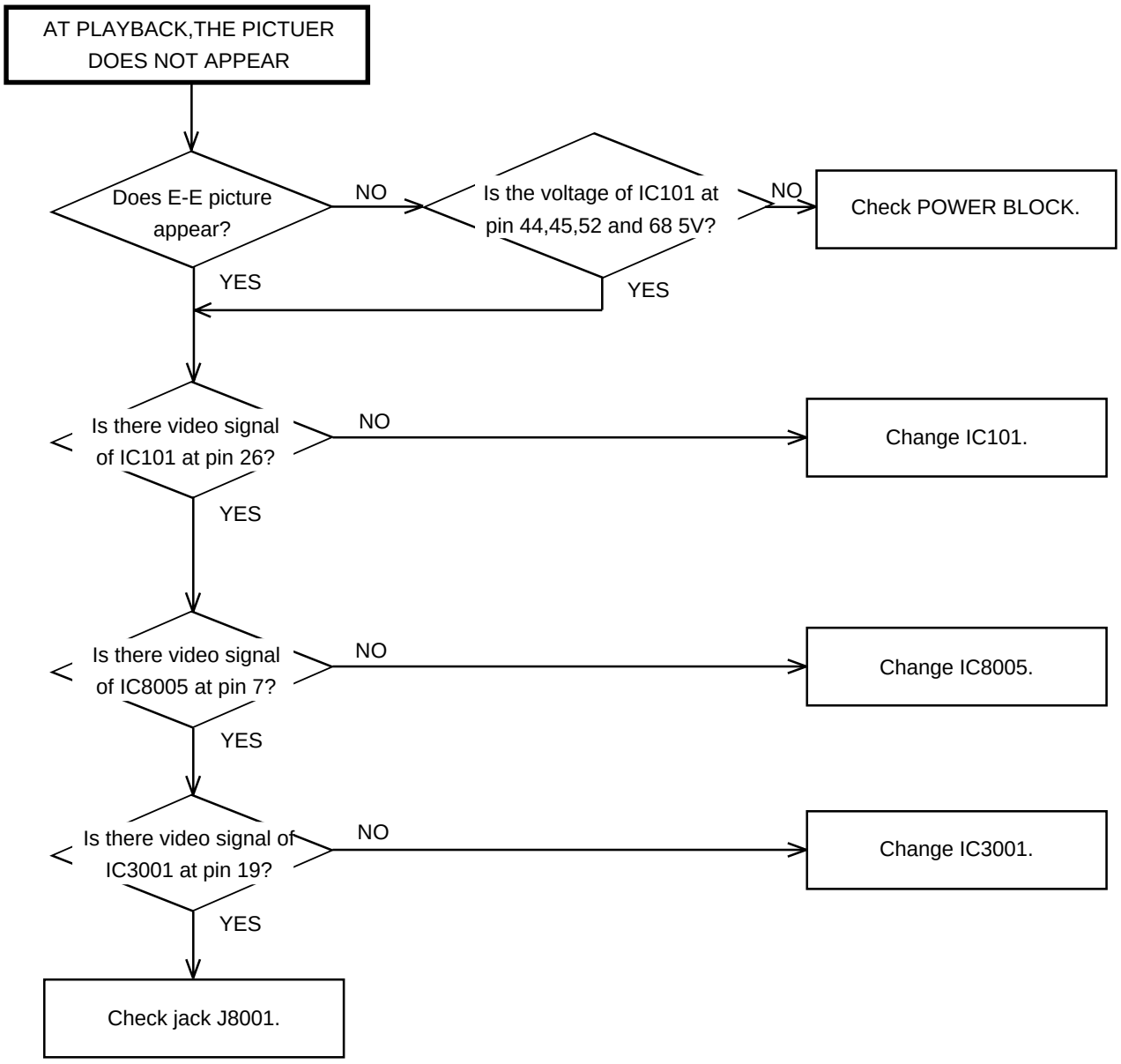
TROUBLESHOOTING GUIDE


WHEN PLAYBACK,FF OR REW MODE IS ACTIVE ,UNIT STOPS IMMEDIATELY
Does CAPSTAN DD MOTOR rotate?
NO
Refer to section "CAPSTAN DD MOTOR NOT ROTAING".
YES
Is there REEL SENSOR PULSE signal at pin 69 and pin 70 of IC3001?
NO
Check Q3001 and Q3002.
YES
Change IC3001.

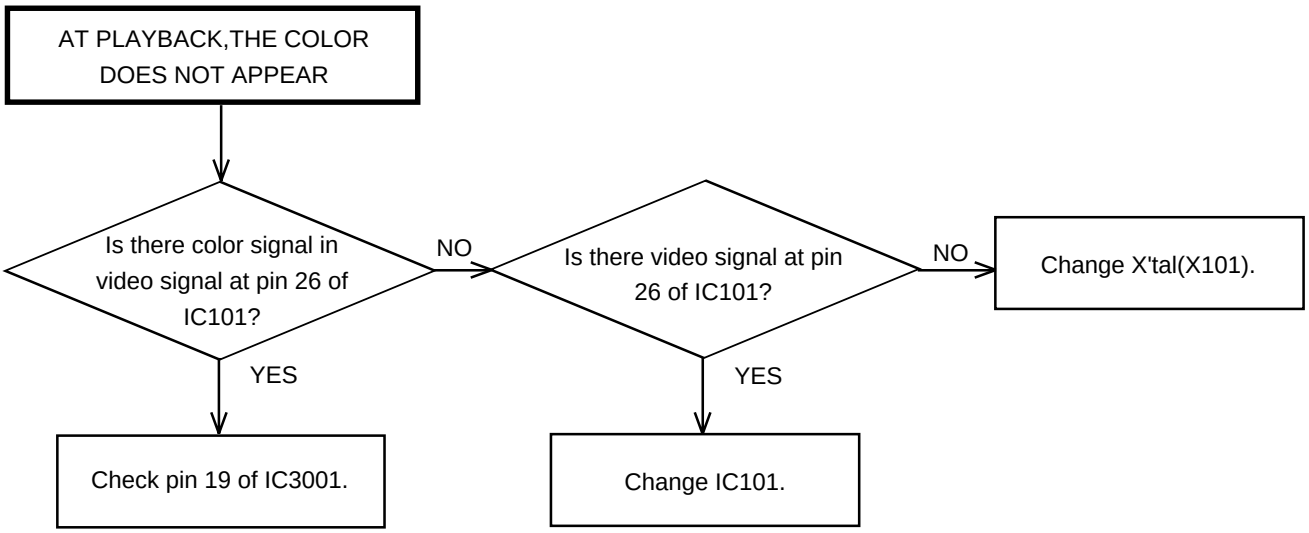
TROUBLESHOOTING GUIDE



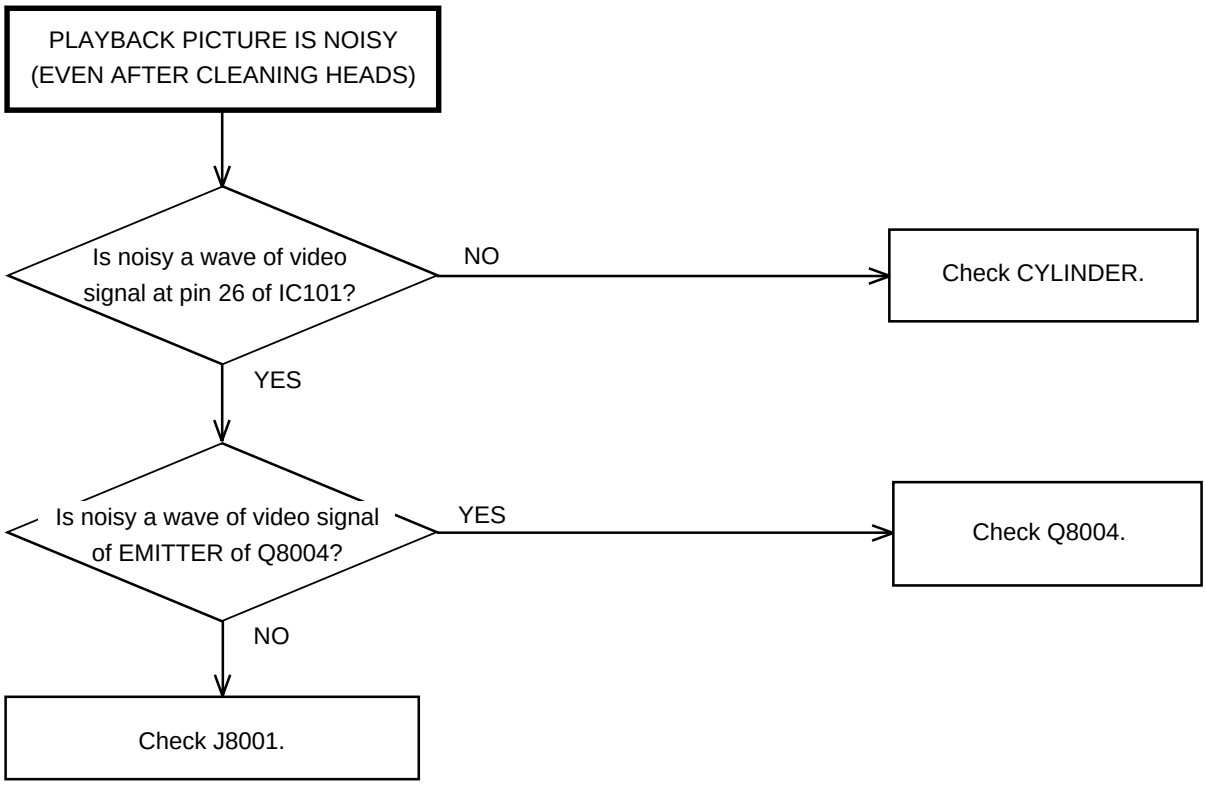
TROUBLESHOOTING GUIDE



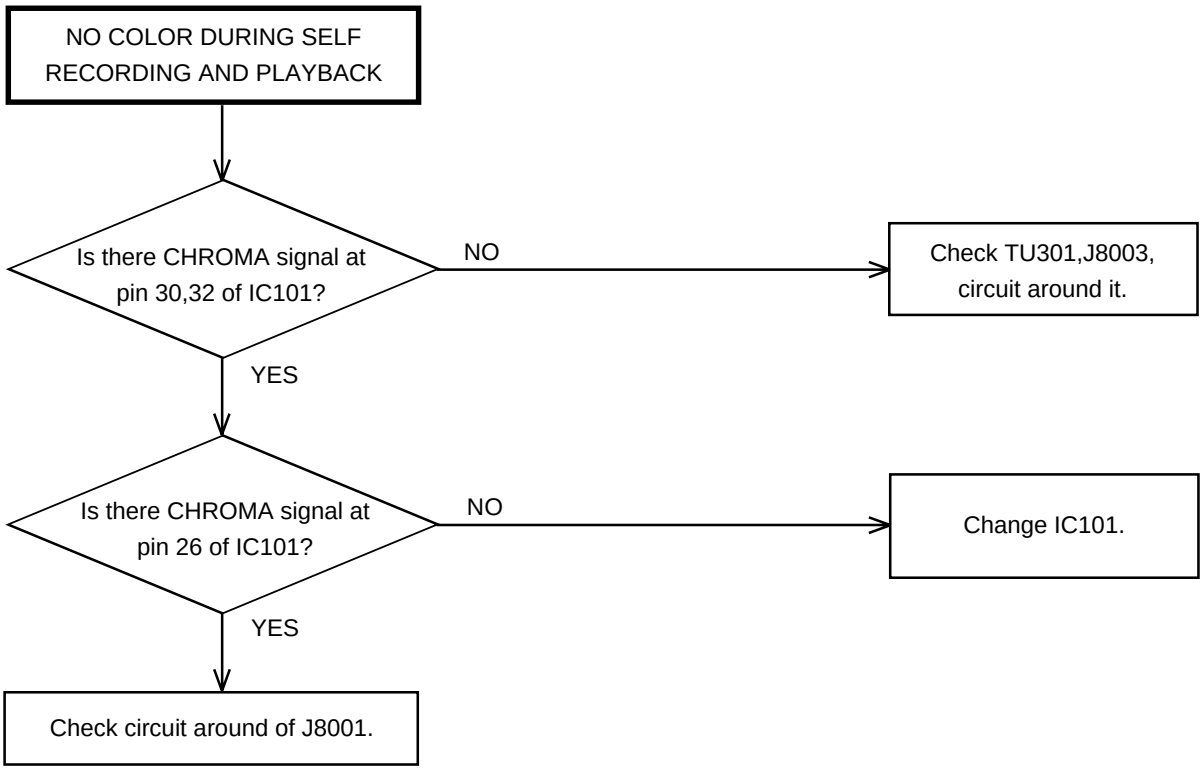
TROUBLESHOOTING GUIDE


AT PLAYBACK,THE COLOR DOES NOT APPEAR
Is there color signal in video signal at pin 26 of IC101?
NO
Is there video signal at pin 26 of IC101?
NO
Change X'tal(X101).
YES
YES
Check pin 19 of IC3001.
Change IC101.

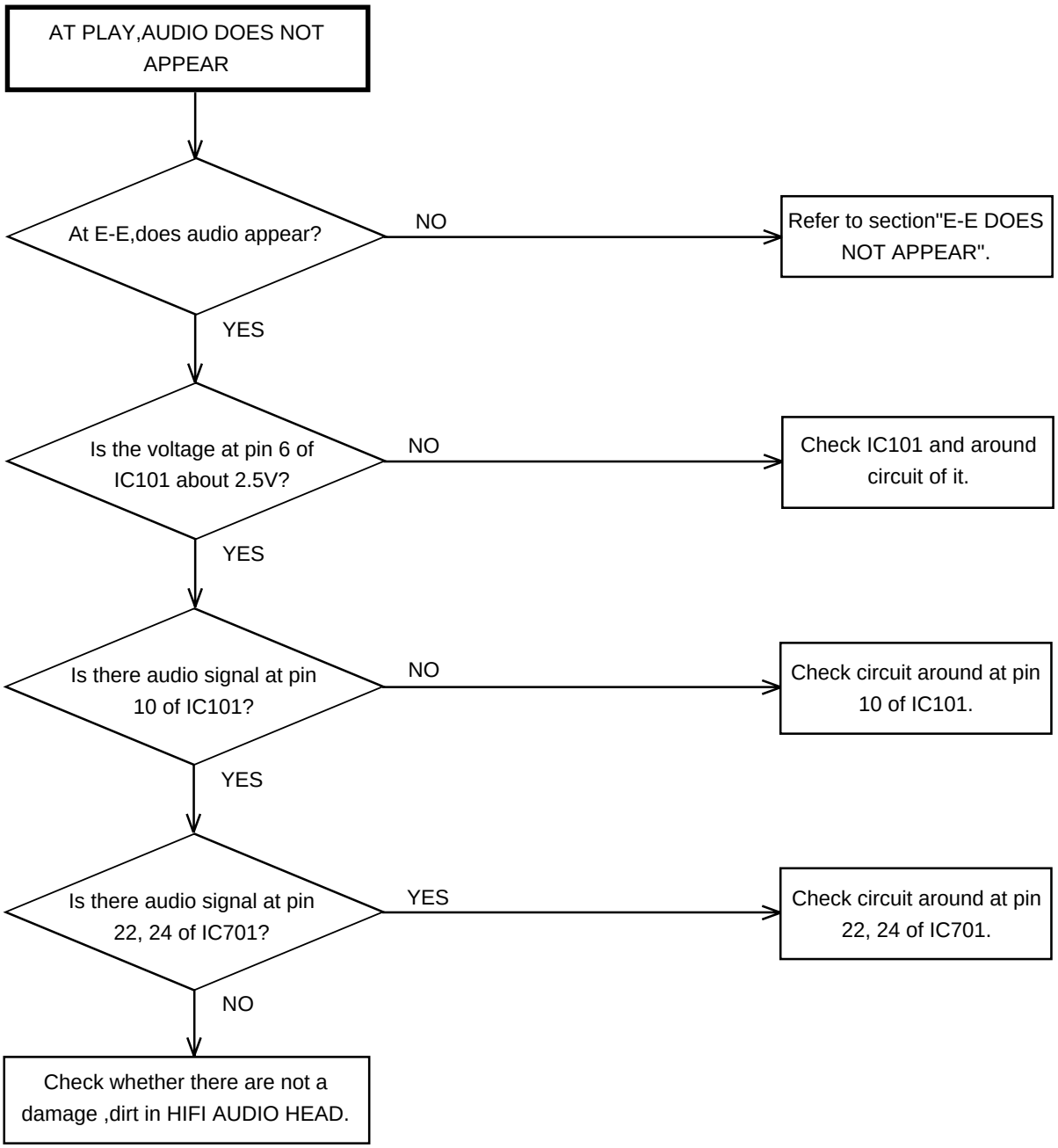
TROUBLESHOOTING GUIDE



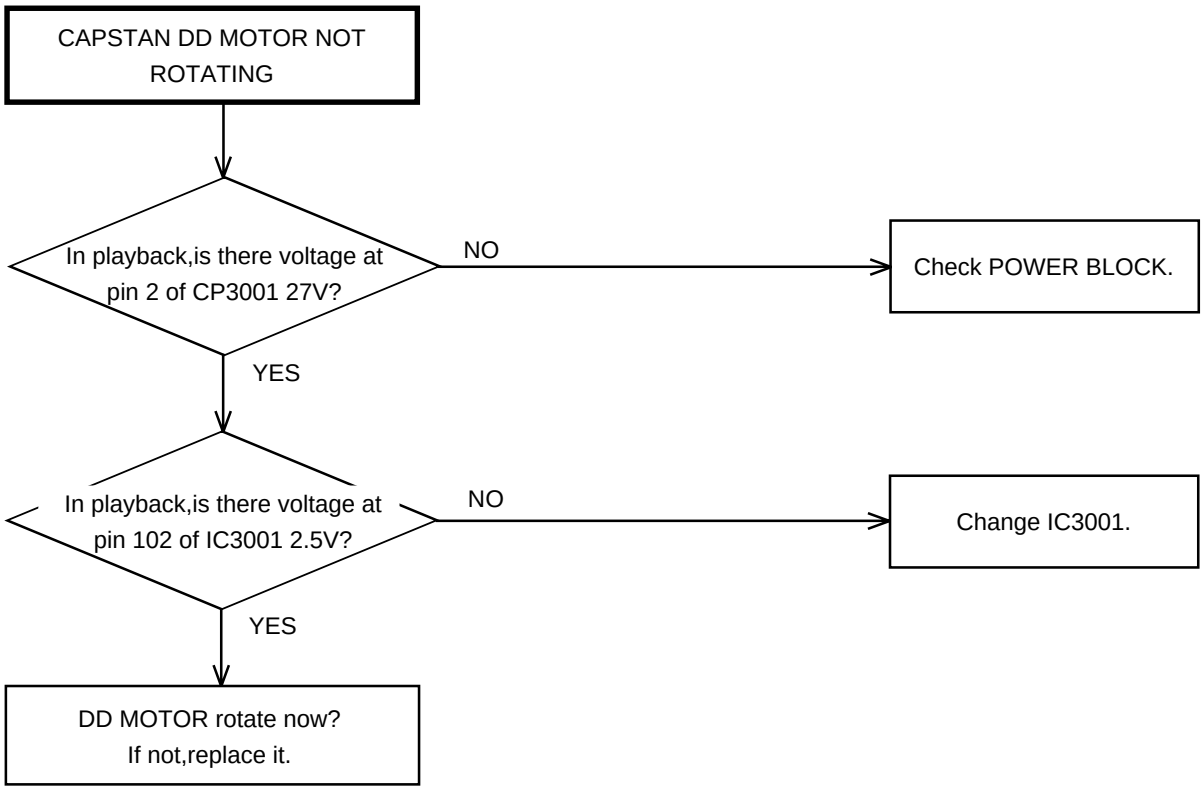
TROUBLESHOOTING GUIDE


NO COLOR DURING SELF RECORDING AND PLAYBACK
Is there CHROMA signal at pin 30,32 of IC101?
NO
Check TU301,J8003, circuit around it.
YES
Is there CHROMA signal at pin 26 of IC101?
NO
Change IC101.
YES
Check circuit around of J8001.

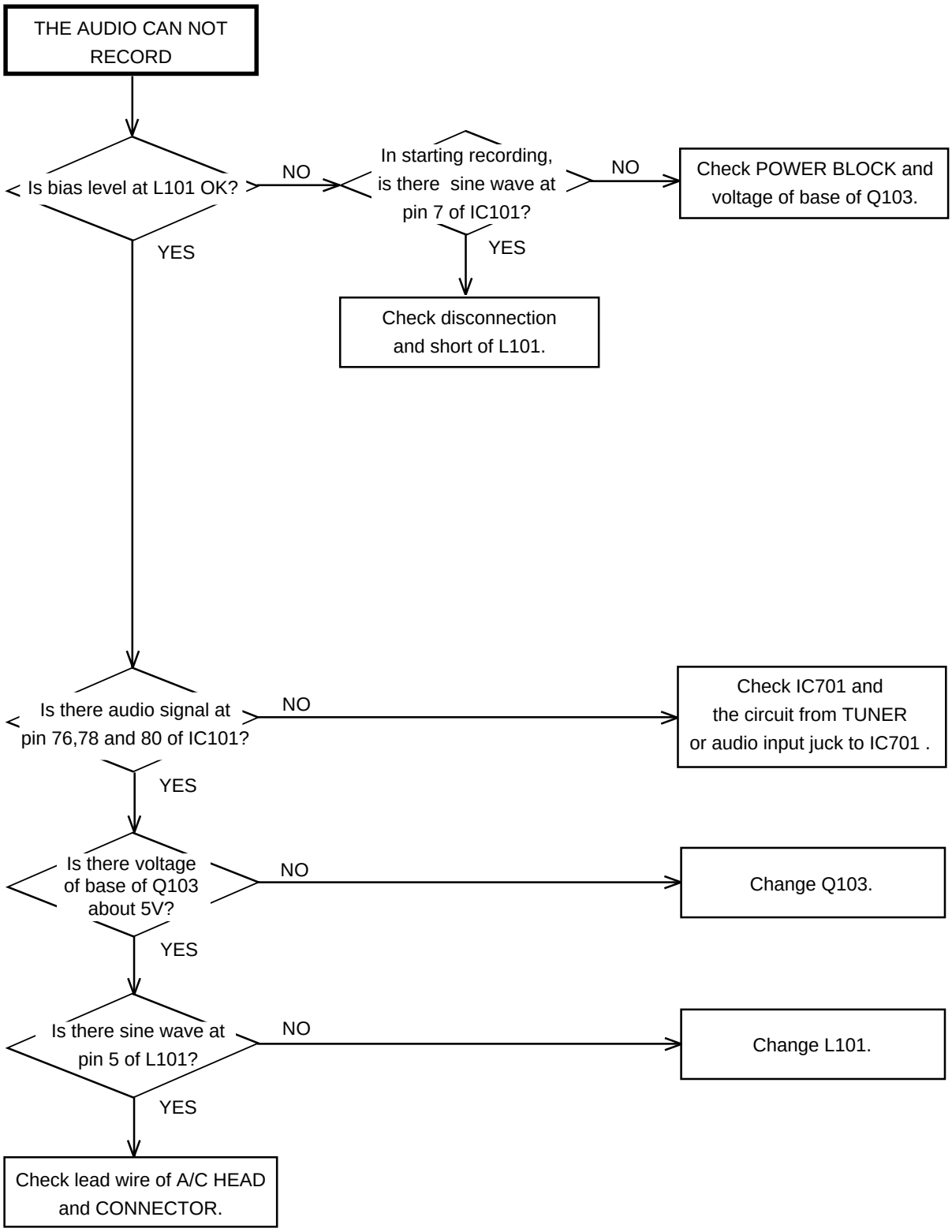
TROUBLESHOOTING GUIDE


AT PLAY,AUDIO DOES NOT APPEAR
At E-E,does audio appear?
NO
Refer to section"E-E DOES NOT APPEAR".
YES
Is the voltage at pin 6 of IC101 about 2.5V?
NO
Check IC101 and around circuit of it.
YES
Is there audio signal at pin 10 of IC101?
NO
Check circuit around at pin 10 of IC101.
YES
Is there audio signal at pin 22, 24 of IC701?
YES
Check circuit around at pin 22, 24 of IC701.
NO
Check whether there are not a damage ,dirt in HIFI AUDIO HEAD.

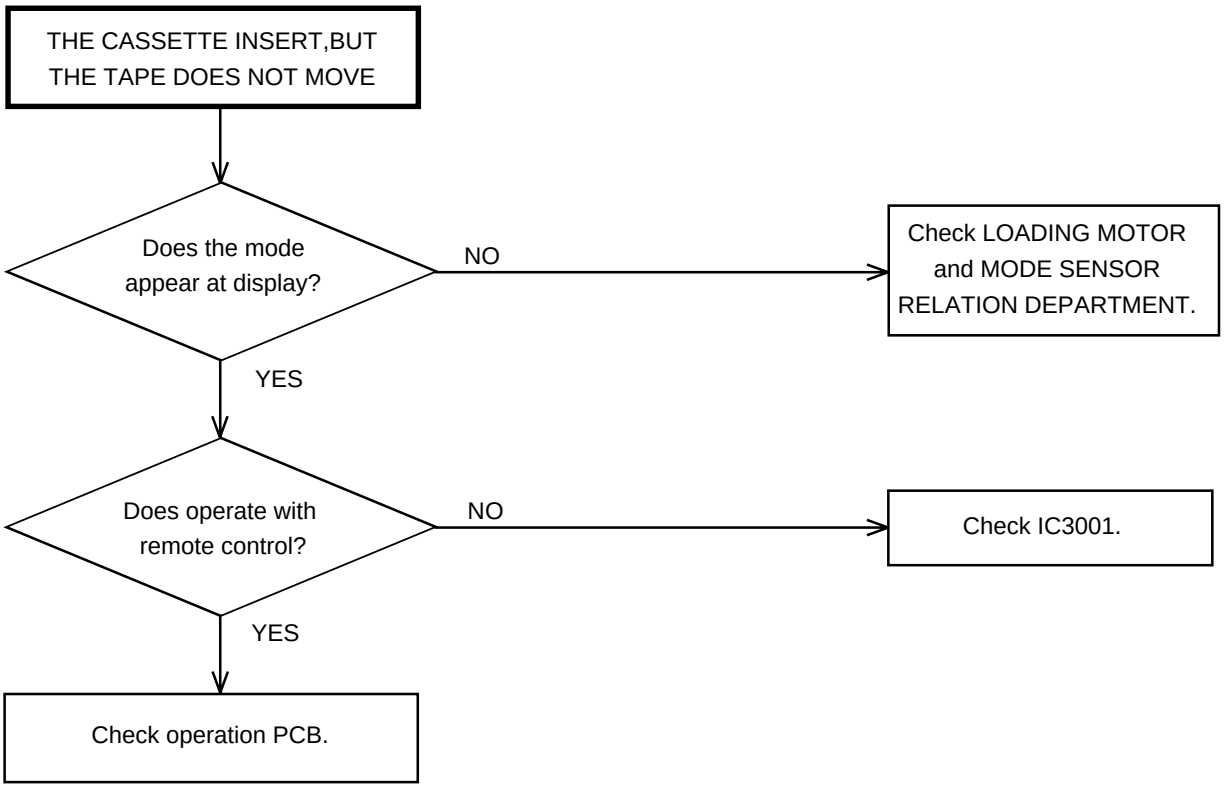
TROUBLESHOOTING GUIDE


CAPSTAN DD MOTOR NOT ROTATING
In playback,is there voltage at pin 2 of CP3001 27V?
NO
Check POWER BLOCK.
YES
In playback,is there voltage at pin 102 of IC3001 2.5V?
NO
Change IC3001.
YES
DD MOTOR rotate now? If not,replace it.

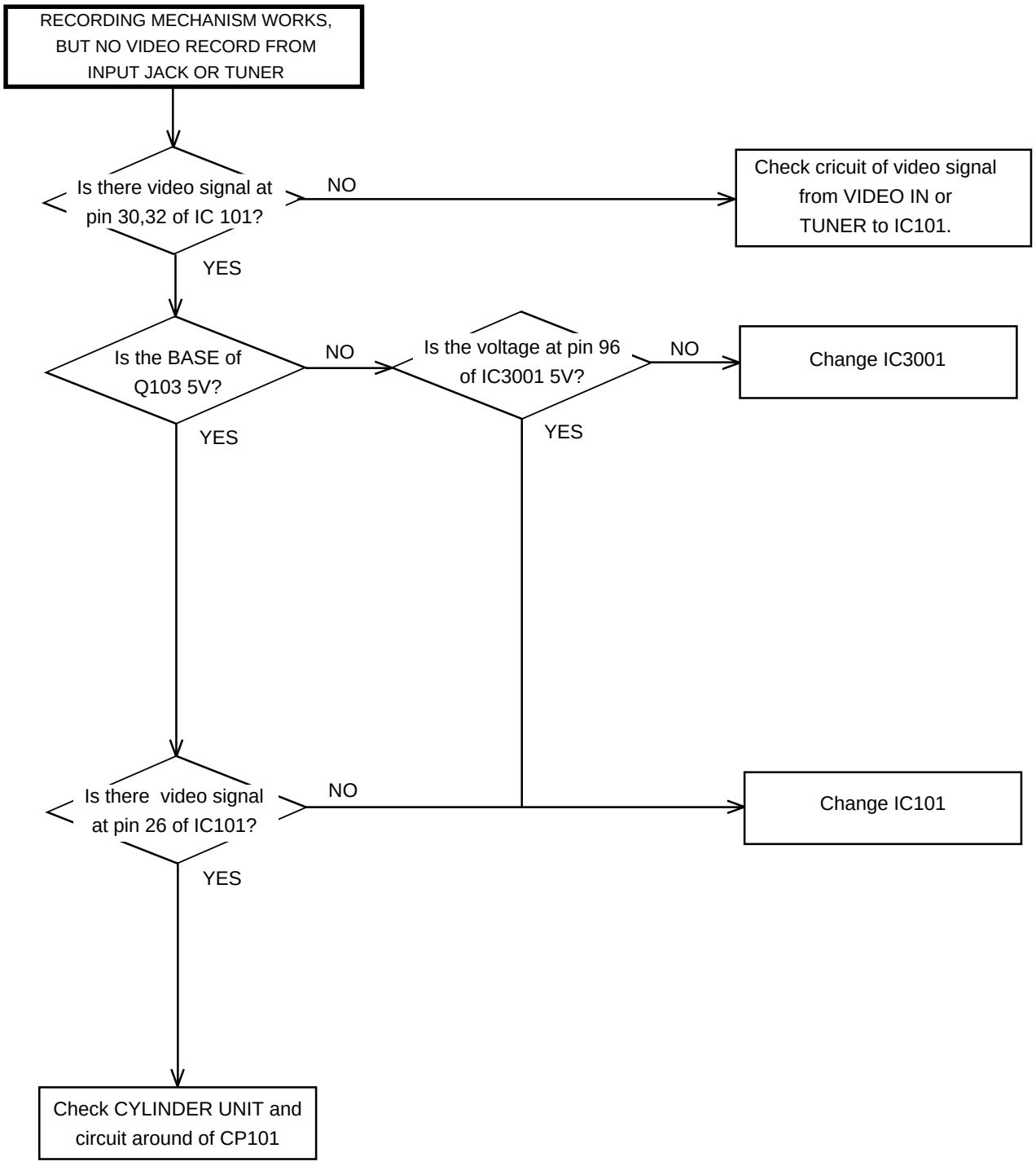
TROUBLESHOOTING GUIDE


THE AUDIO CAN NOT RECORD
Is bias level at L101 OK?
NO
In starting recording, is there sine wave at pin 7 of IC101?
NO
Check POWER BLOCK and voltage of base of Q103.
YES
YES
Check disconnection and short of L101.
Is there audio signal at pin 76,78 and 80 of IC101?
NO
Check IC701 and the circuit from TUNER or audio input juck to IC701 .
YES
Is there voltage of base of Q103 about 5V?
NO
Change Q103.
YES
Is there sine wave at pin 5 of L101?
NO
Change L101.
YES
Check lead wire of A/C HEAD and CONNECTOR.

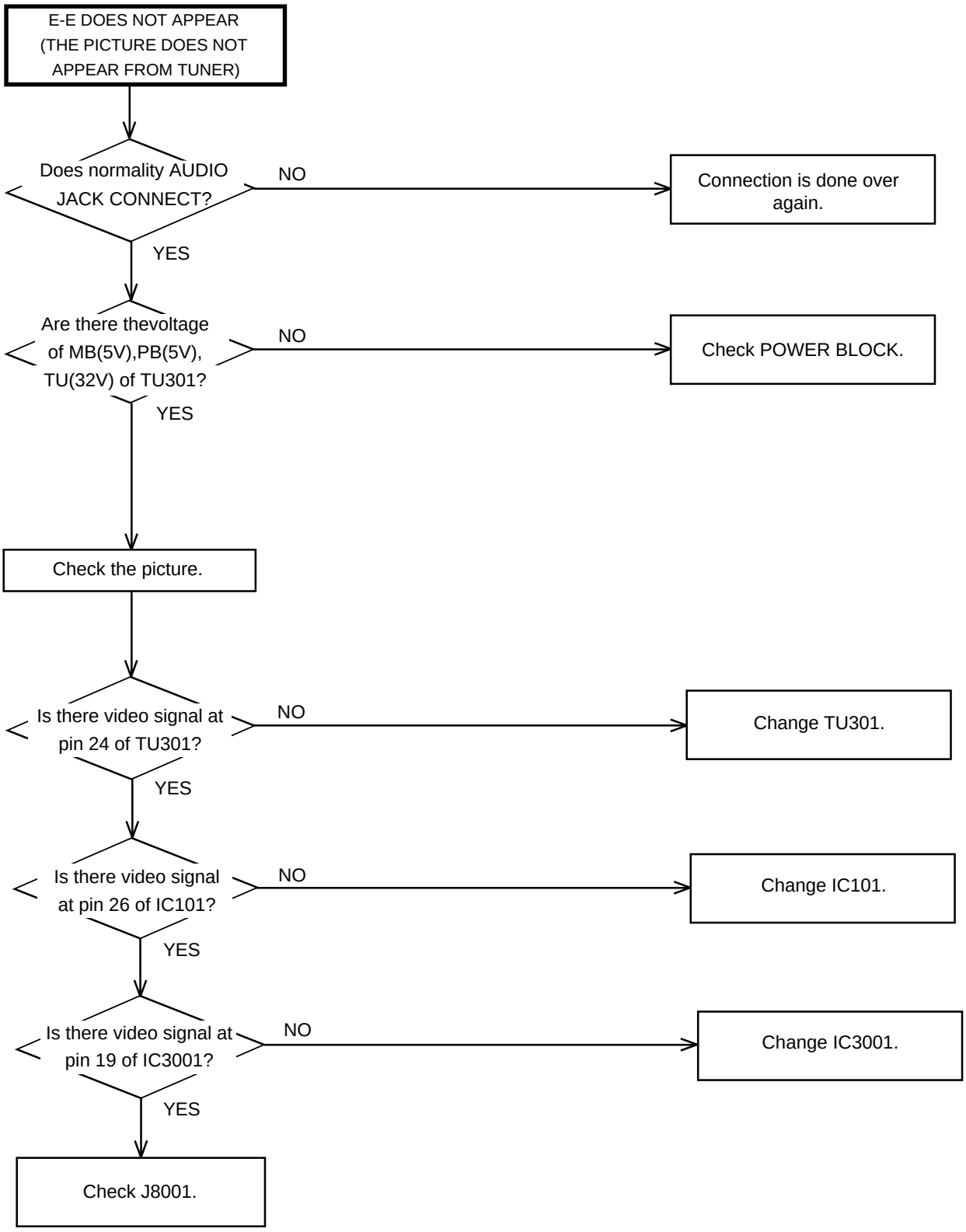
TROUBLESHOOTING GUIDE



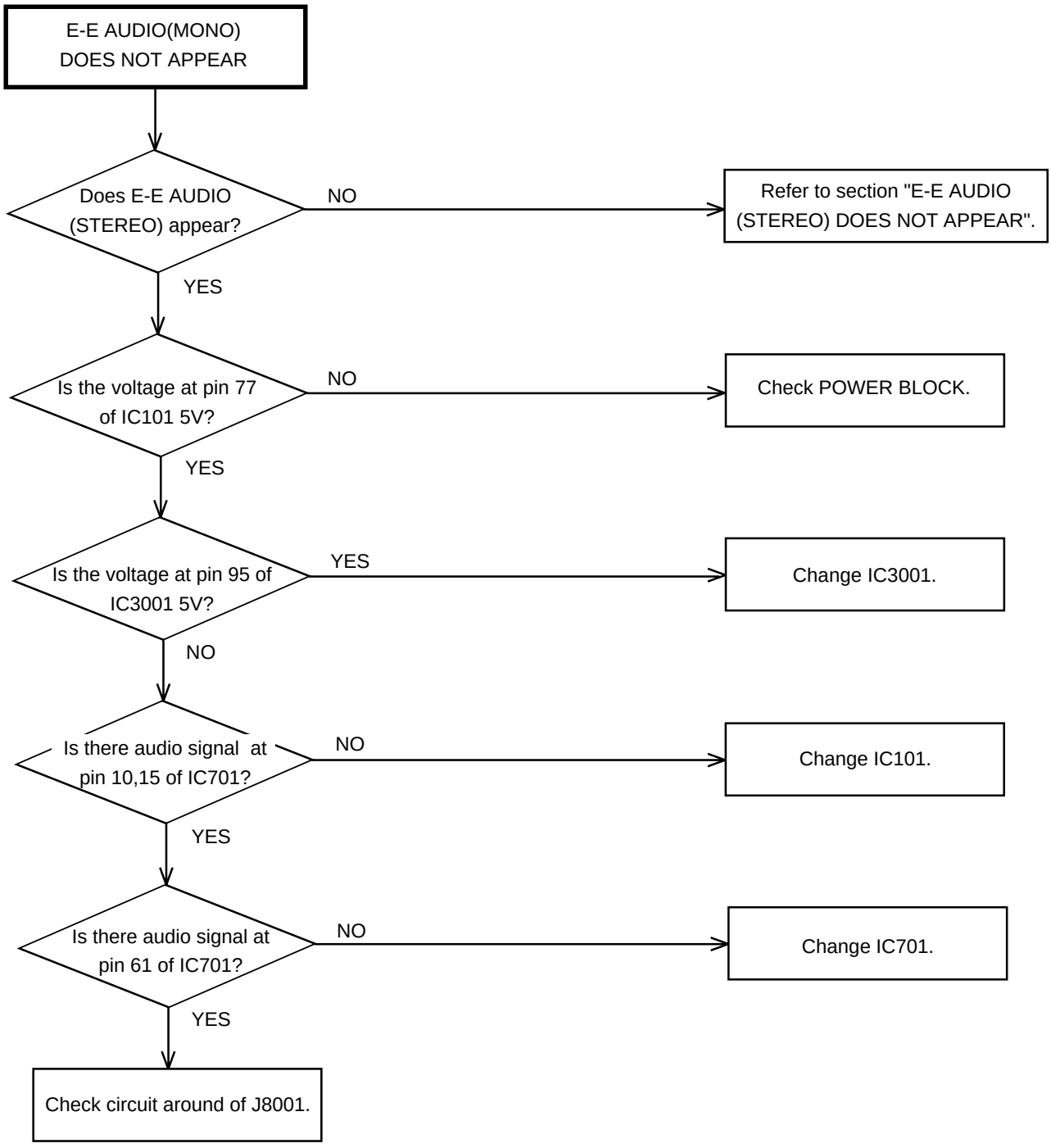
TROUBLESHOOTING GUIDE


RECORDING MECHANISM WORKS, BUT NO VIDEO RECORD FROM INPUT JACK OR TUNER
Is there video signal at pin 30,32 of IC 101?
NO
Check cricuit of video signal from VIDEO IN or TUNER to IC101.
YES
Is the BASE of Q103 5V?
NO
Is the voltage at pin 96 of IC3001 5V?
NO
Change IC3001
YES
YES
Is there video signal at pin 26 of IC101?
NO
Change IC101
YES
Check CYLINDER UNIT and circuit around of CP101

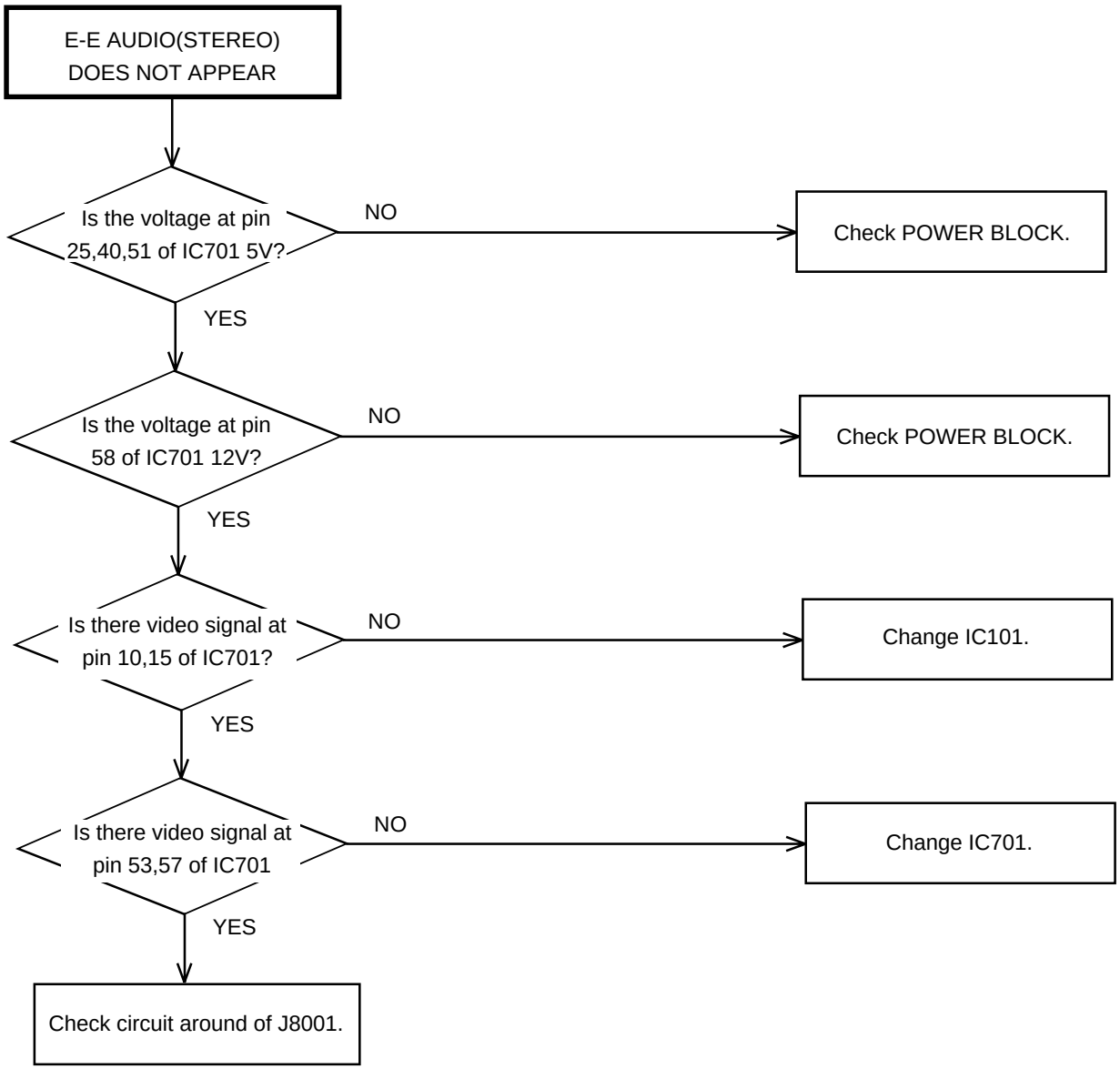
TROUBLESHOOTING GUIDE



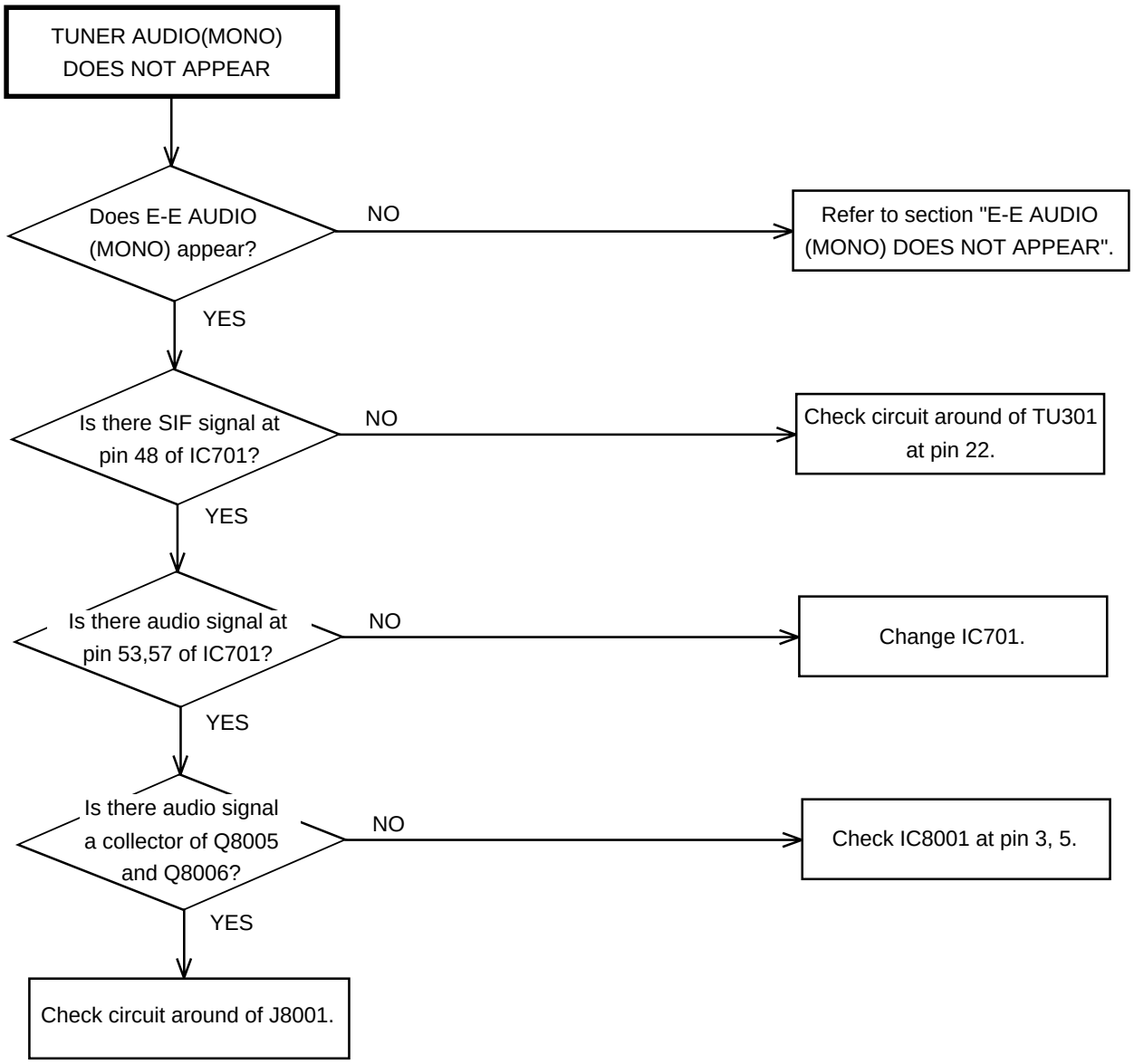
TROUBLESHOOTING GUIDE



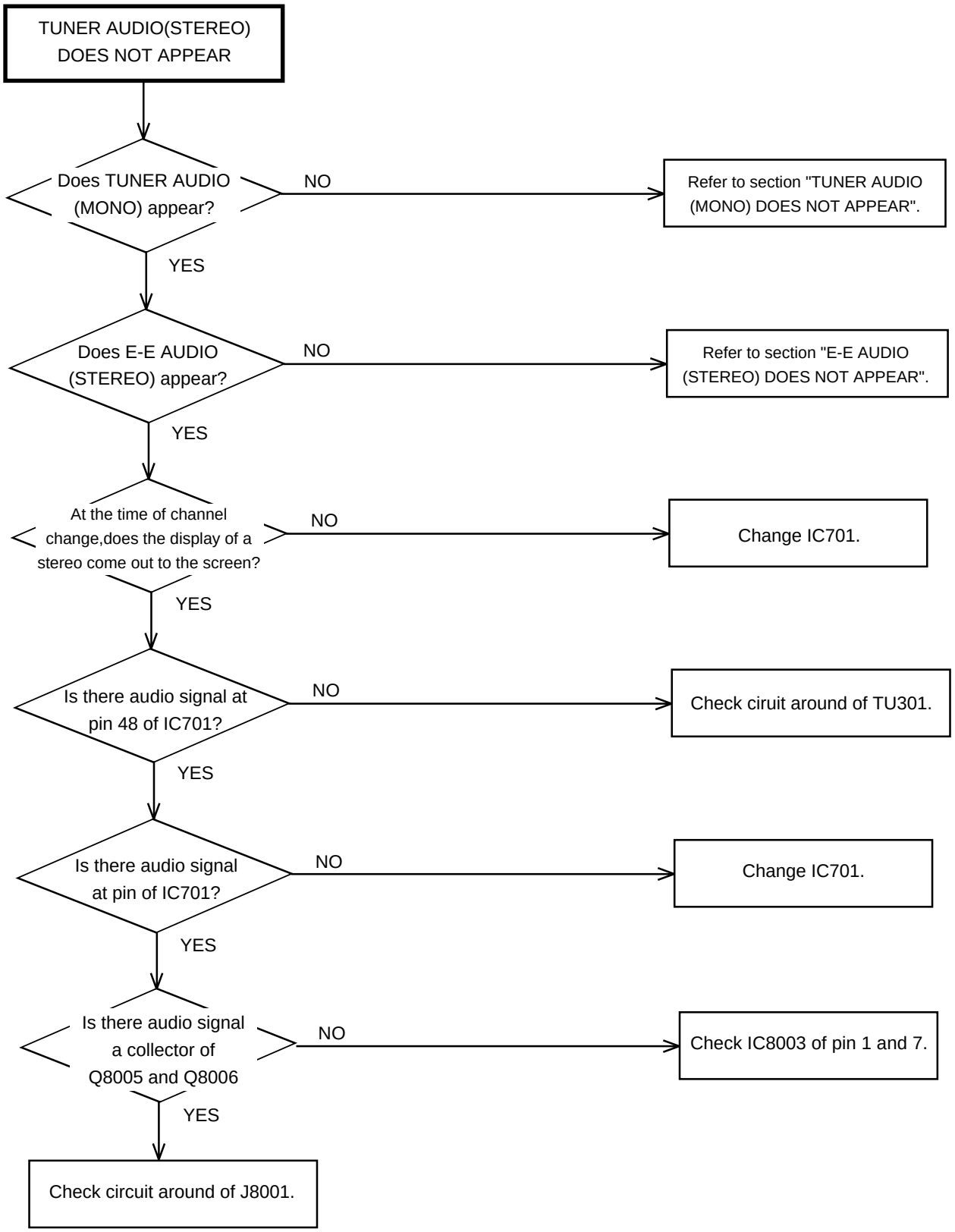
TROUBLESHOOTING GUIDE



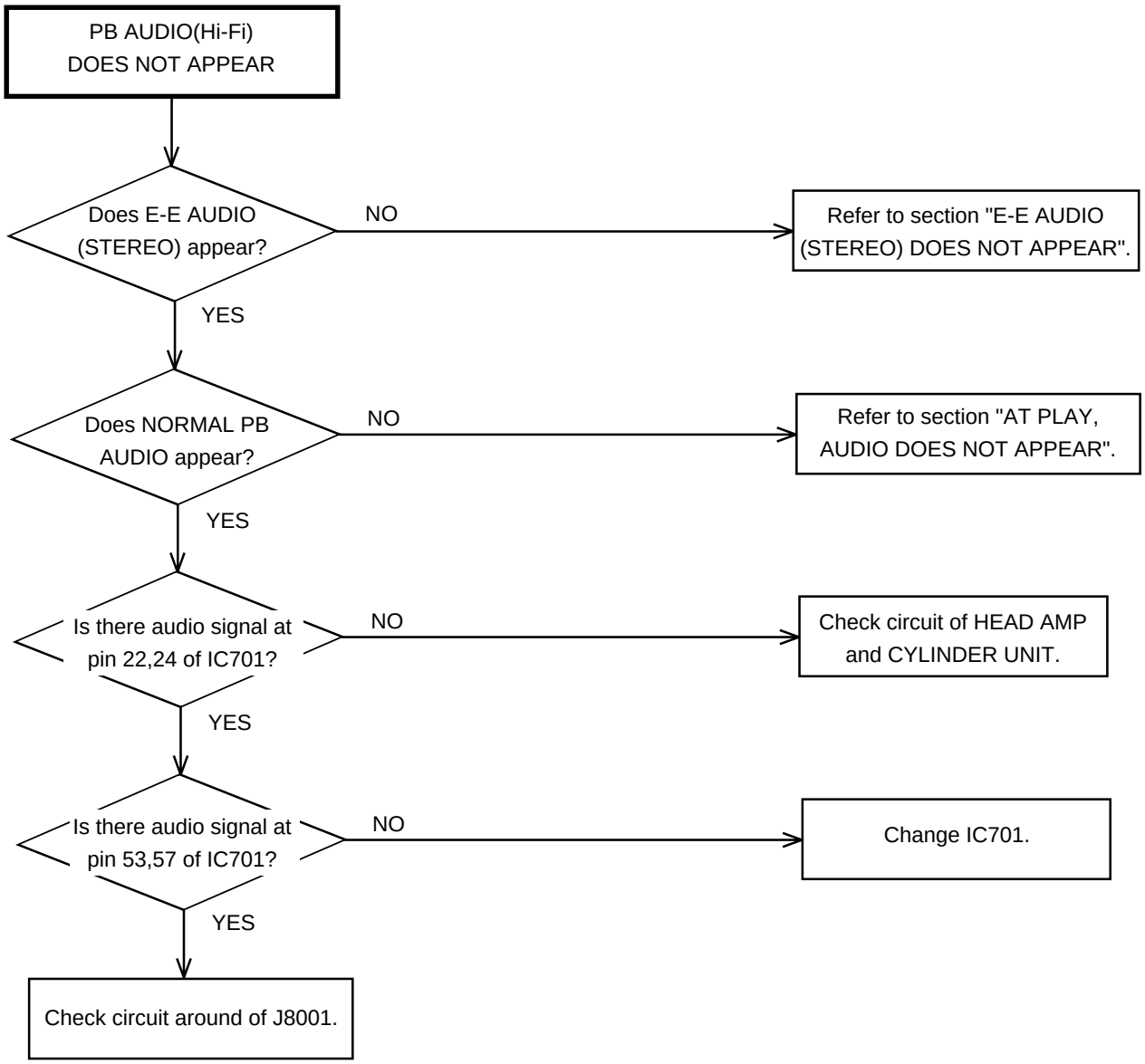
TROUBLESHOOTING GUIDE


TUNER AUDIO(MONO) DOES NOT APPEAR
Does E-E AUDIO (MONO) appear?
NO
Refer to section "E-E AUDIO (MONO) DOES NOT APPEAR".
YES
Is there SIF signal at pin 48 of IC701?
NO
Check circuit around of TU301 at pin 22.
YES
Is there audio signal at pin 53,57 of IC701?
NO
Change IC701.
YES
Is there audio signal a collector of Q8005 and Q8006?
NO
Check IC8001 at pin 3, 5.
YES
Check circuit around of J8001.

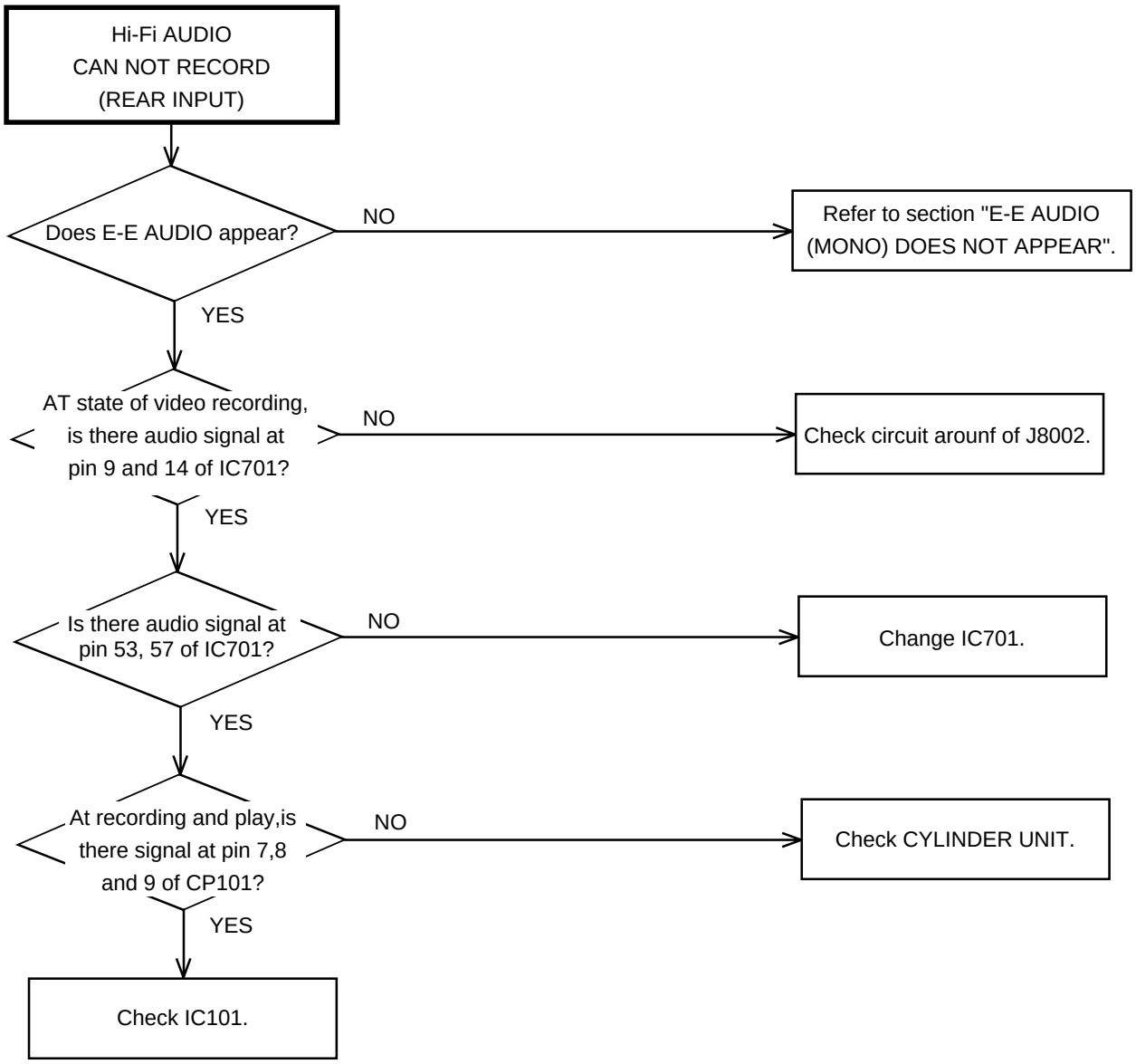
TROUBLESHOOTING GUIDE


TUNER AUDIO(STEREO) DOES NOT APPEAR
Does TUNER AUDIO (MONO) appear?
NO
Refer to section "TUNER AUDIO (MONO) DOES NOT APPEAR".
YES
Does E-E AUDIO (STEREO) appear?
NO
Refer to section "E-E AUDIO (STEREO) DOES NOT APPEAR".
YES
At the time of channel change,does the display of a stereo come out to the screen?
NO
Change IC701.
YES
Is there audio signal at pin 48 of IC701?
NO
Check ciruit around of TU301.
YES
Is there audio signal at pin of IC701?
NO
Change IC701.
YES
Is there audio signal a collector of Q8005 and Q8006
NO
Check IC8003 of pin 1 and 7.
YES
Check circuit around of J8001.

TROUBLESHOOTING GUIDE

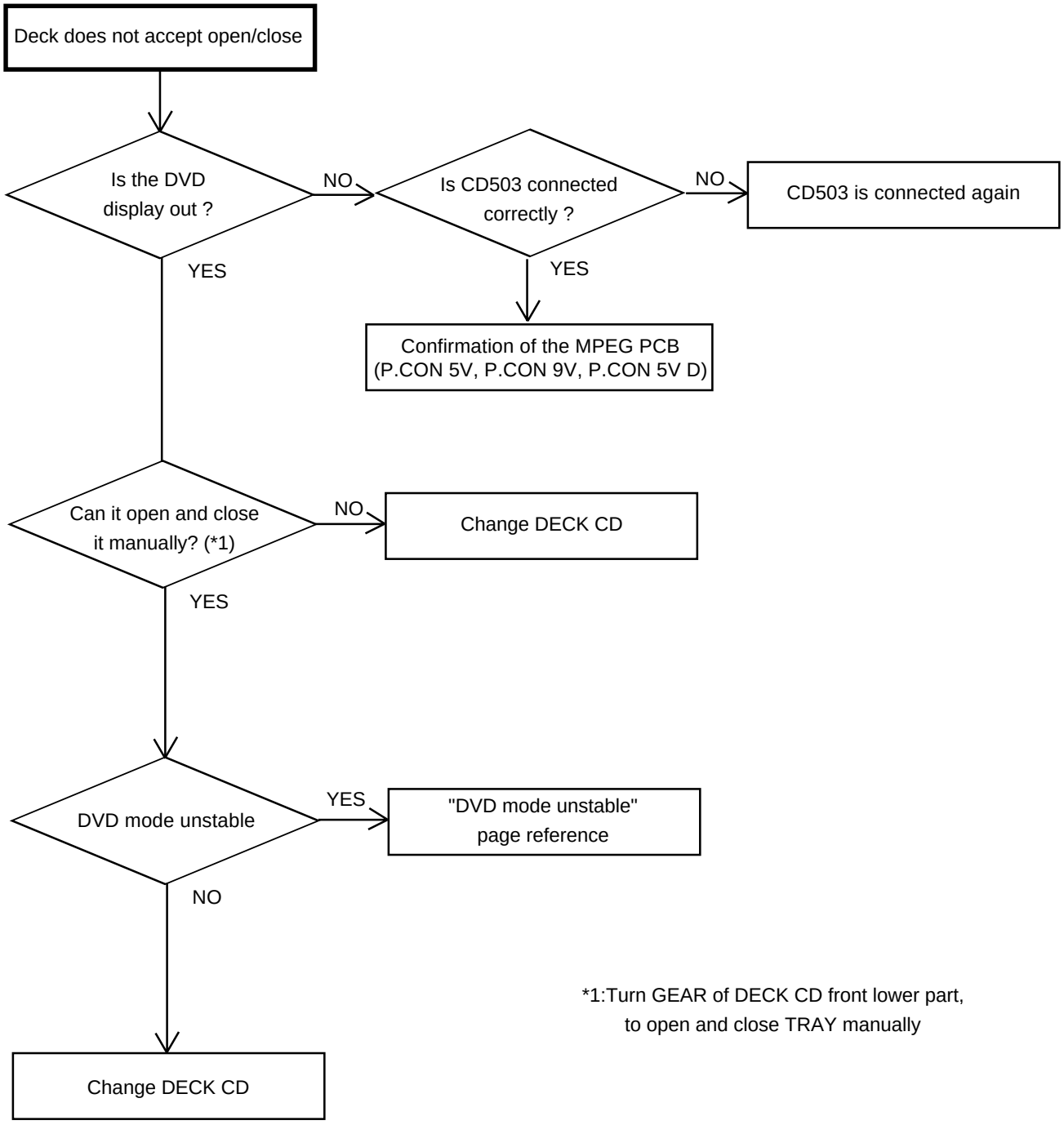


TROUBLESHOOTING GUIDE


Hi-Fi AUDIO
CAN NOT RECORD
(REAR INPUT)
Does E-E AUDIO appear?
NO
Refer to section "E-E AUDIO (MONO) DOES NOT APPEAR".
YES
AT state of video recording, is there audio signal at pin 9 and 14 of IC701?
NO
Check circuit arounf of J8002.
YES
Is there audio signal at pin 53, 57 of IC701?
NO
Change IC701.
YES
At recording and play,is there signal at pin 7,8 and 9 of CP101?
NO
Check CYLINDER UNIT.
YES
Check IC101.

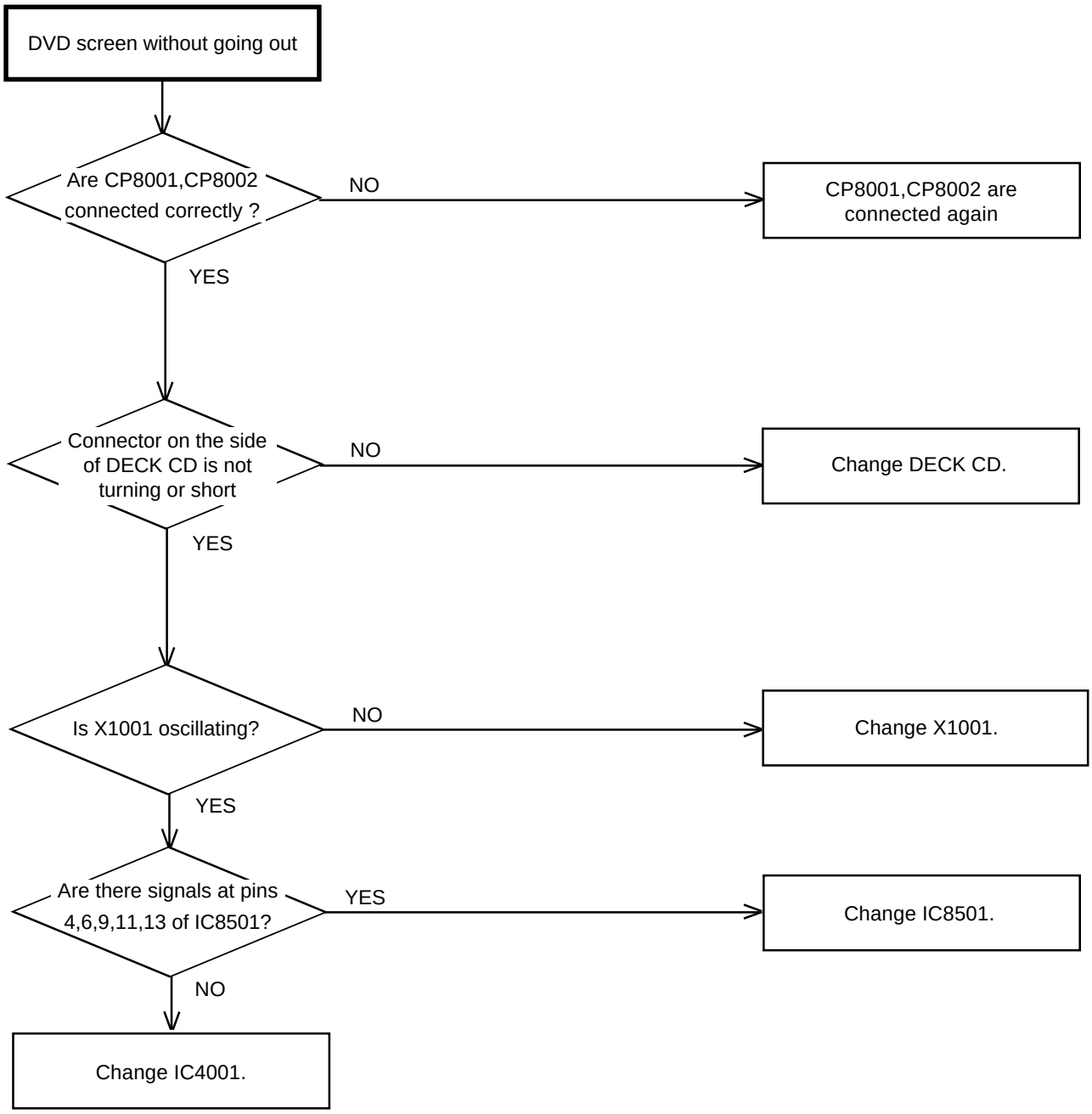
TROUBLESHOOTING GUIDE

(DVD SECTION)

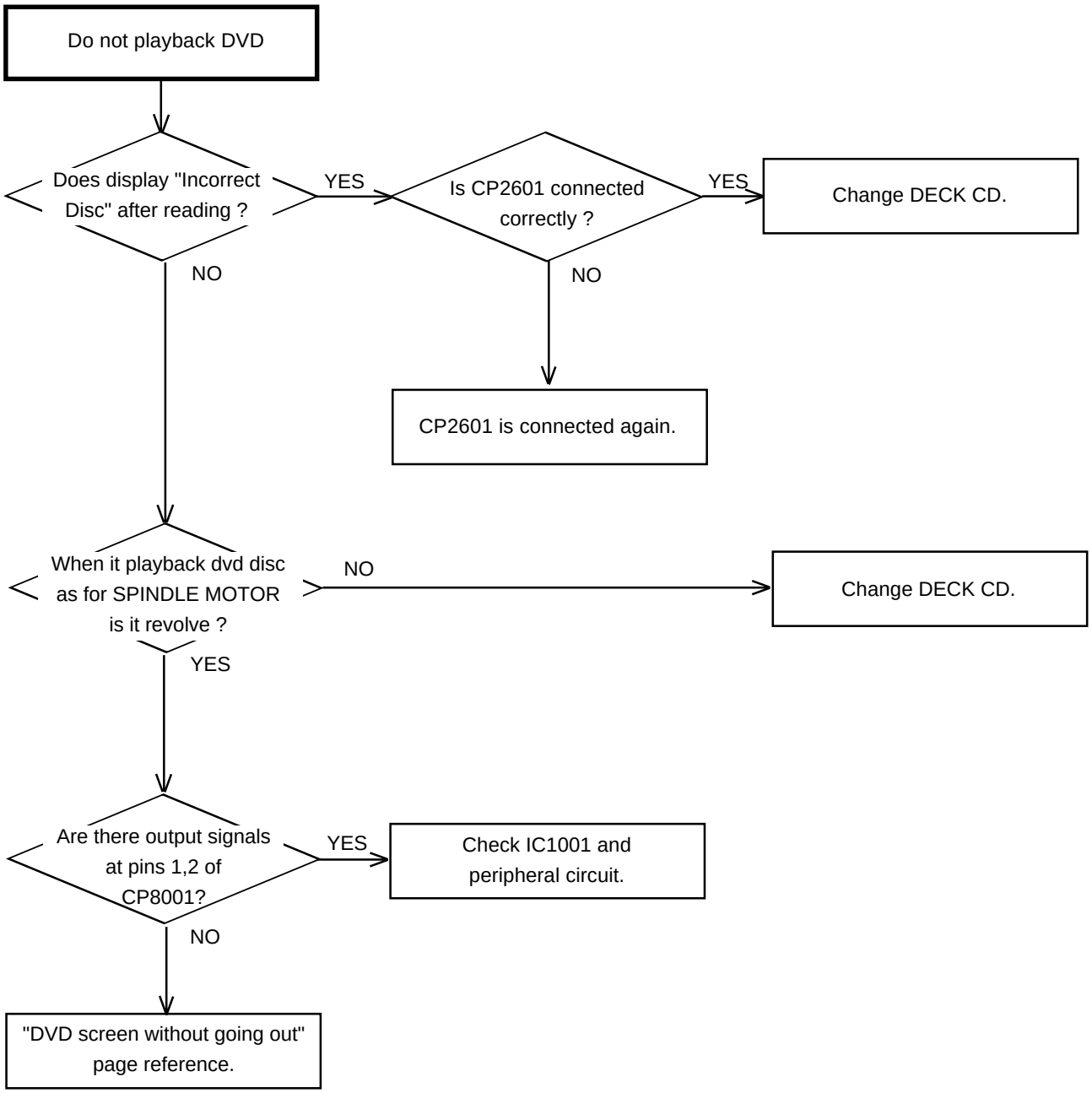


*1:Turn GEAR of DECK CD front lower part, to open and close TRAY manually

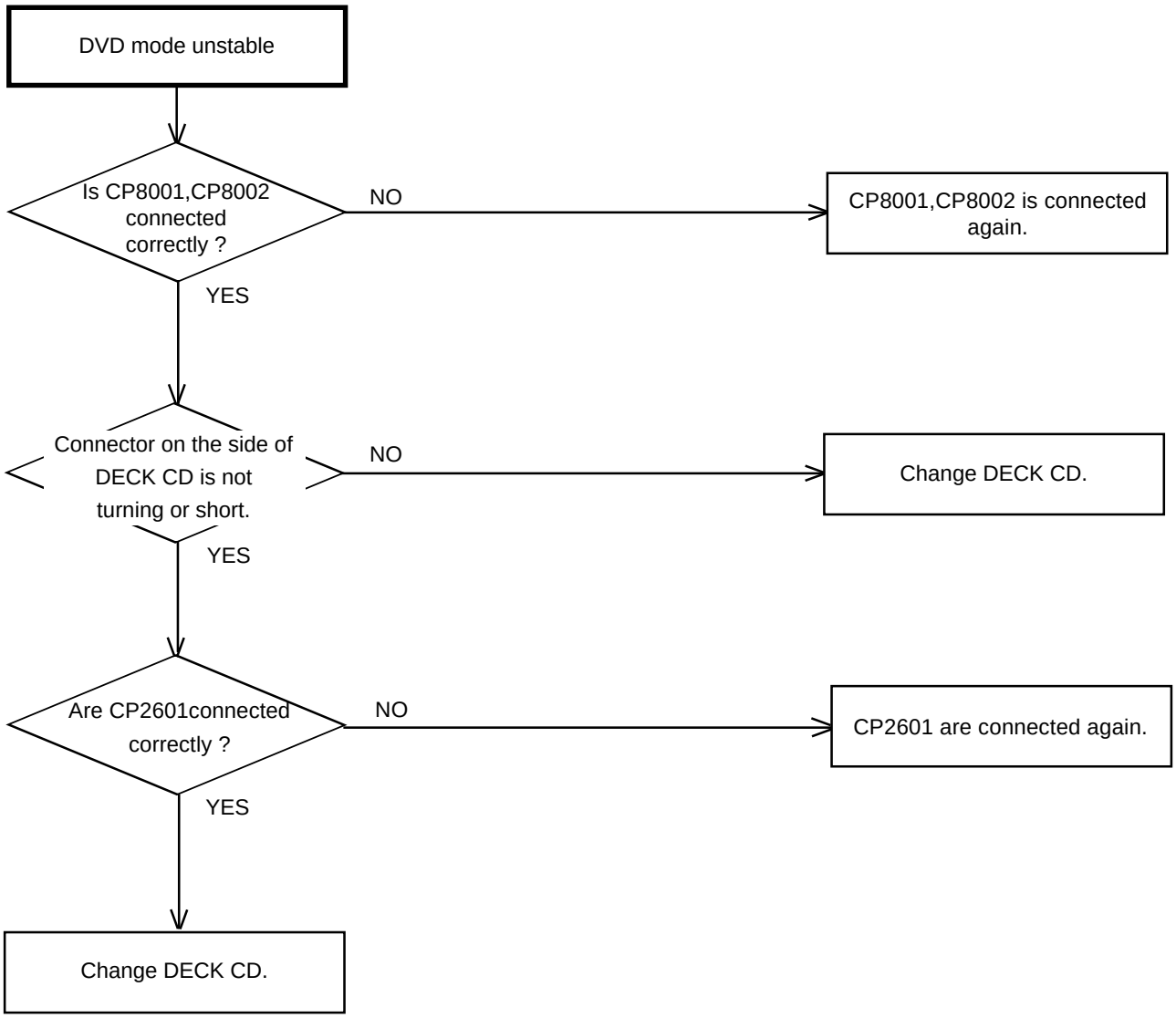
TROUBLESHOOTING GUIDE



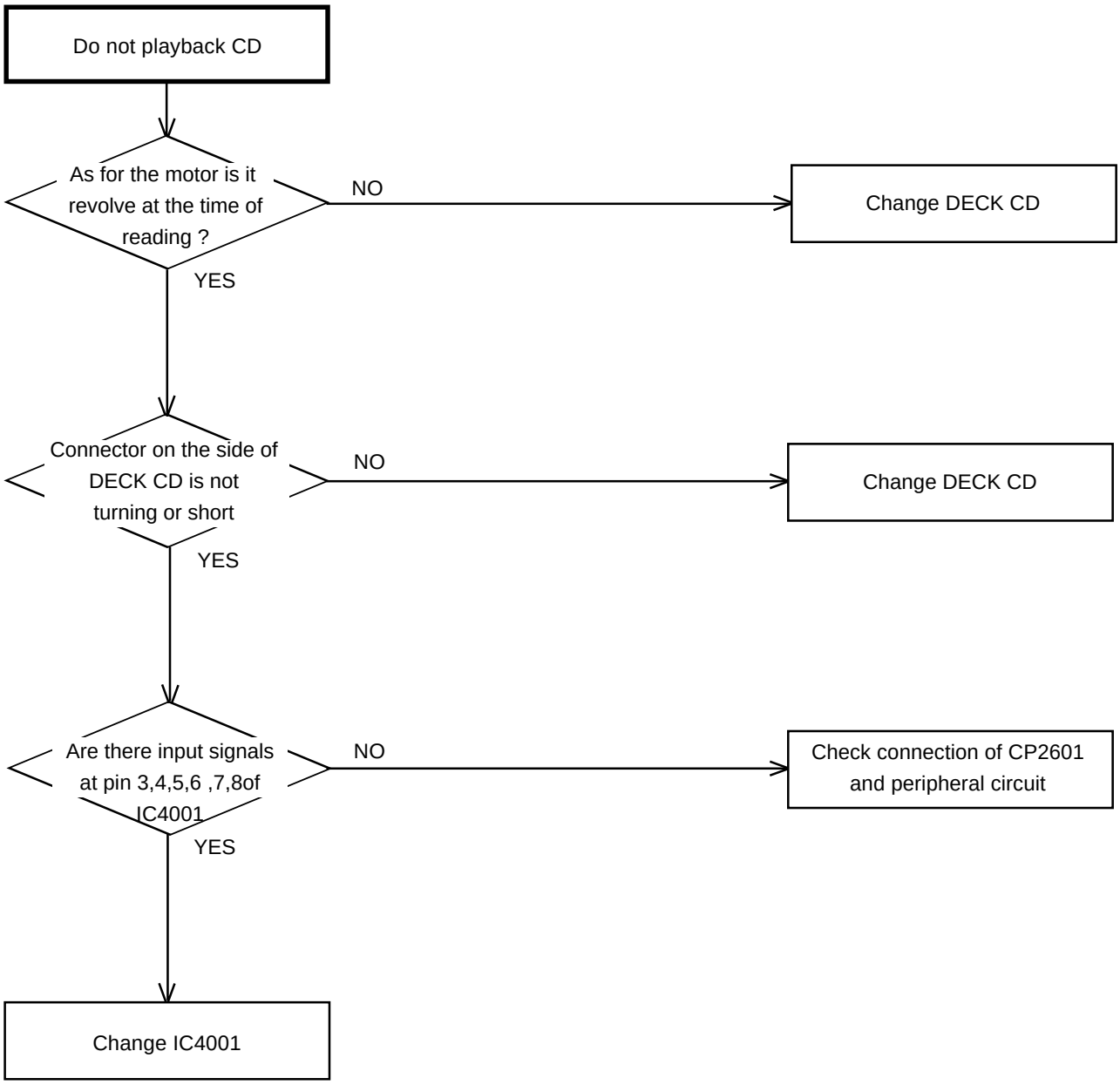
TROUBLESHOOTING GUIDE



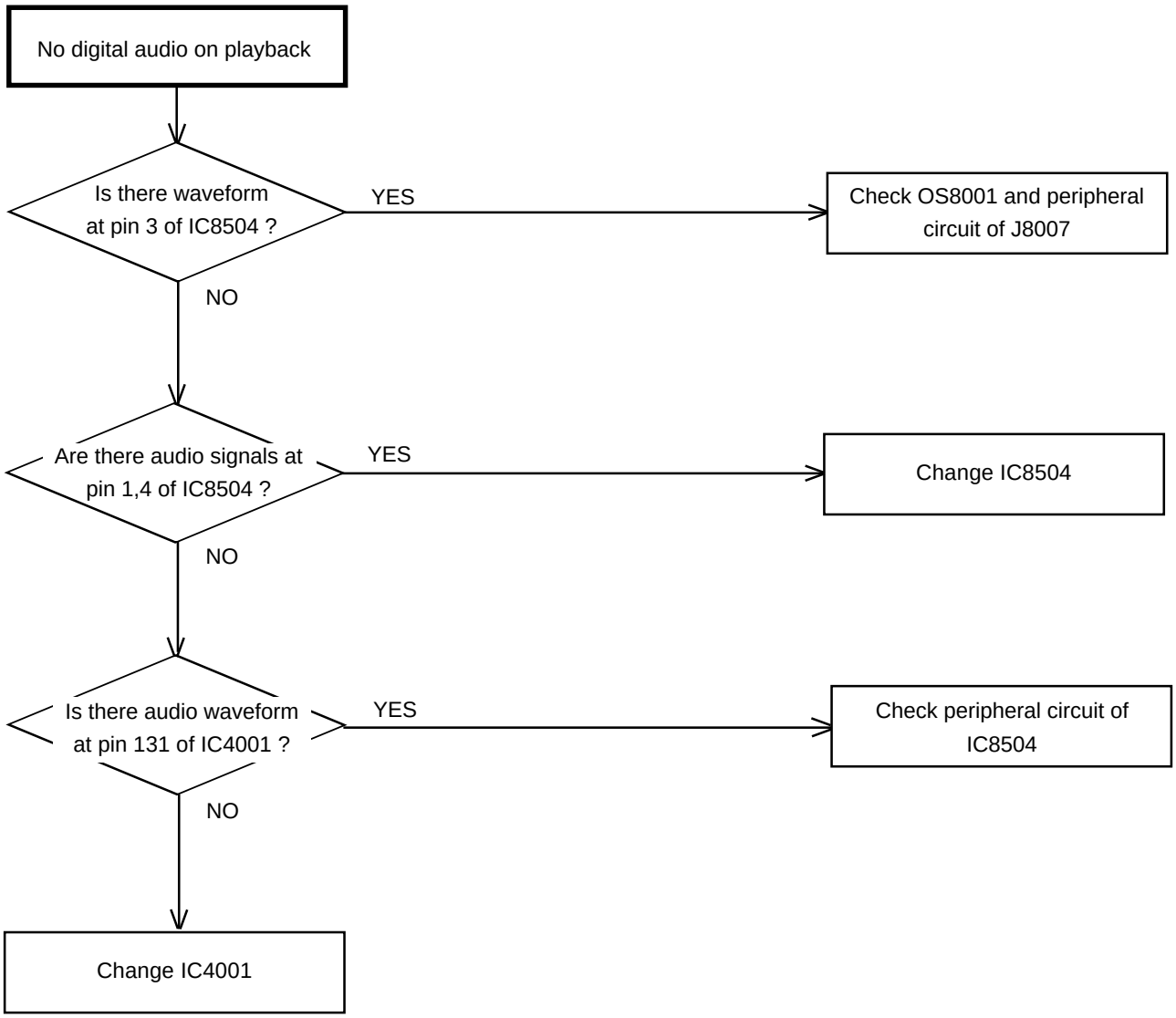
TROUBLESHOOTING GUIDE



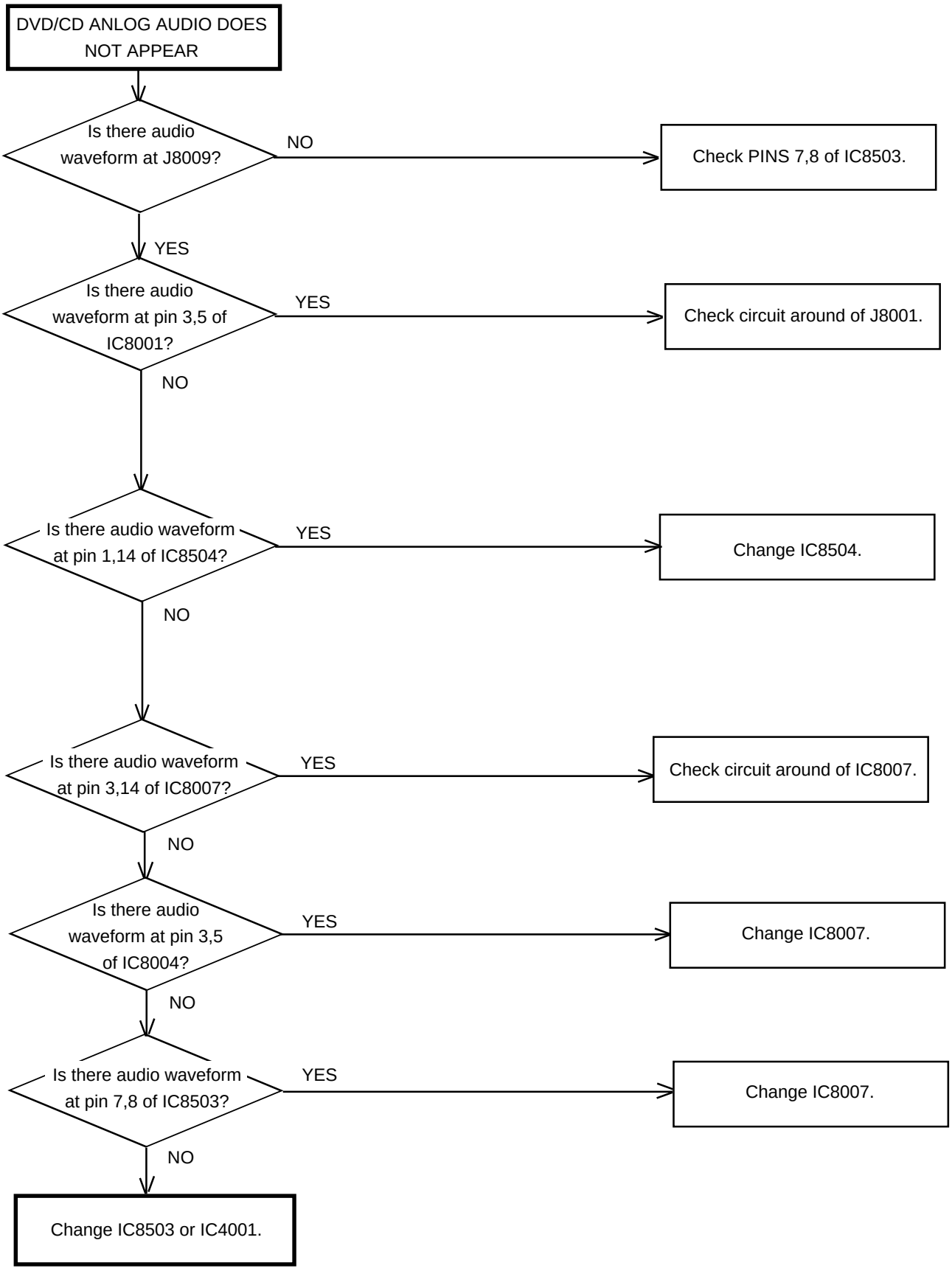
TROUBLESHOOTING GUIDE


Do not playback CD
As for the motor is it revolve at the time of reading ?
NO
Change DECK CD
YES
Connector on the side of DECK CD is not turning or short
NO
Change DECK CD
YES
Are there input signals at pin 3,4,5,6 ,7,8of IC4001
NO
Check connection of CP2601 and peripheral circuit
YES
Change IC4001

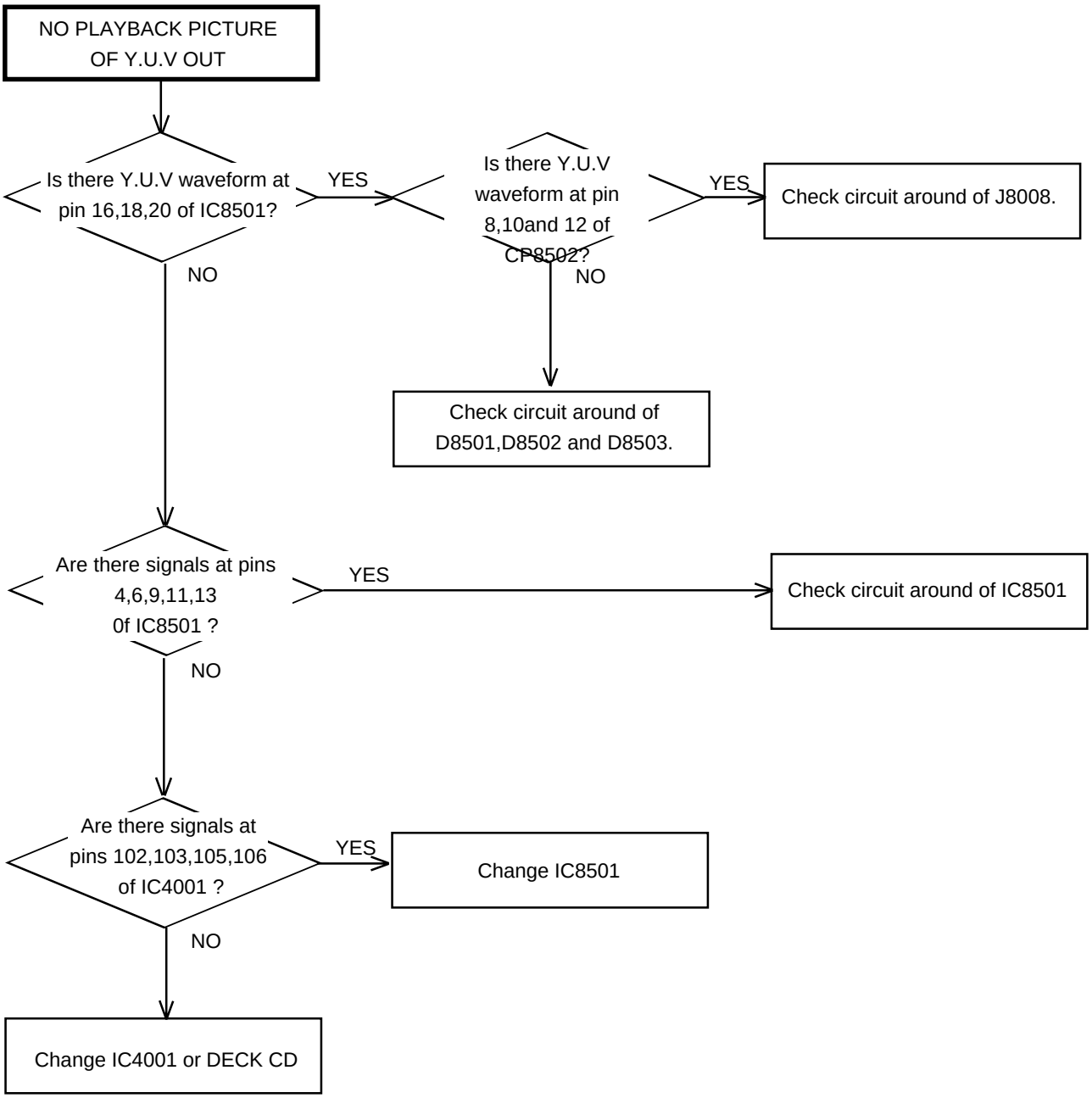
TROUBLESHOOTING GUIDE


No digital audio on playback
Is there waveform at pin 3 of IC8504 ?
YES
Check OS8001 and peripheral circuit of J8007
NO
Are there audio signals at pin 1,4 of IC8504 ?
YES
Change IC8504
NO
Is there audio waveform at pin 131 of IC4001 ?
YES
Check peripheral circuit of IC8504
NO
Change IC4001

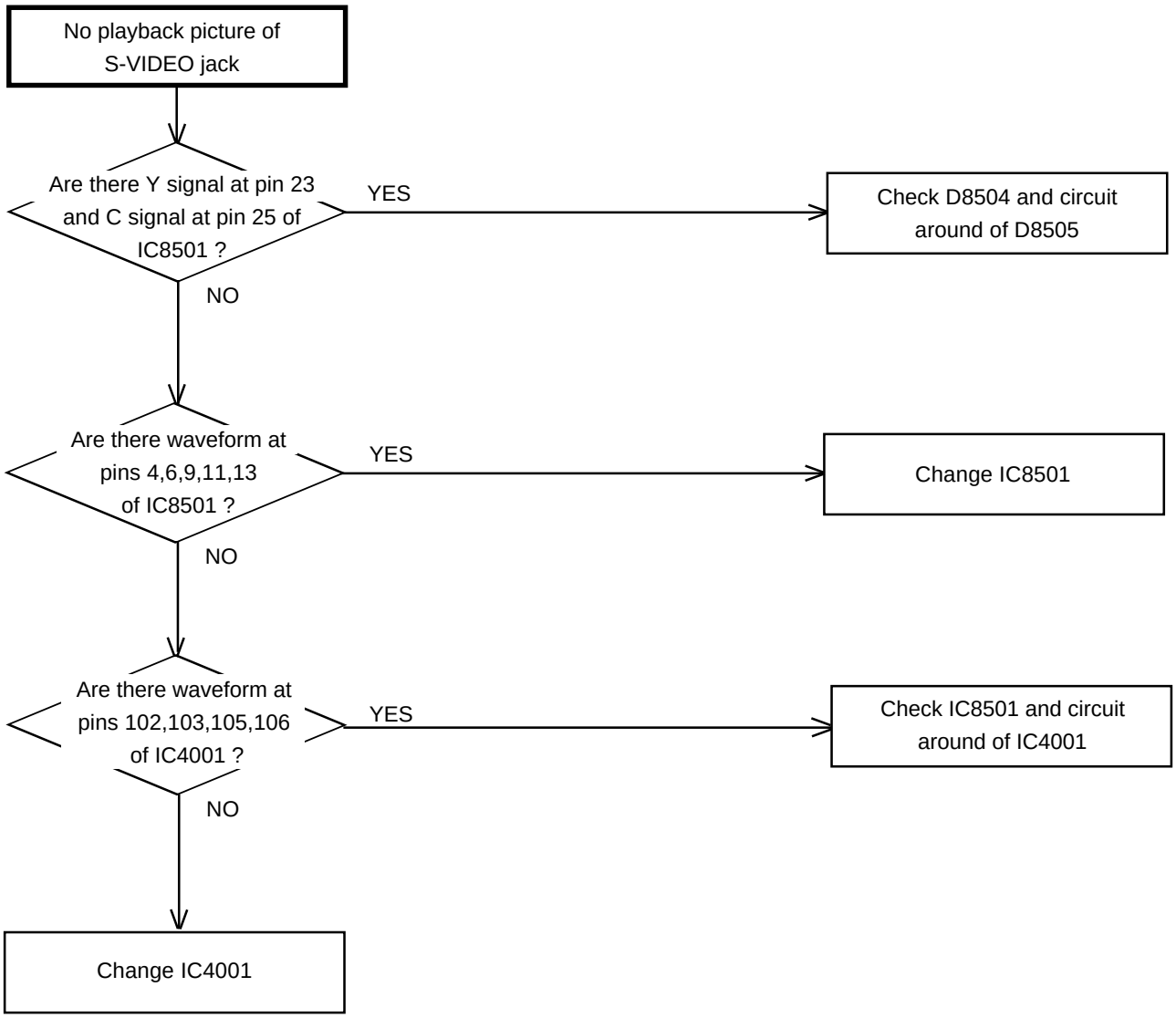
TROUBLESHOOTING GUIDE



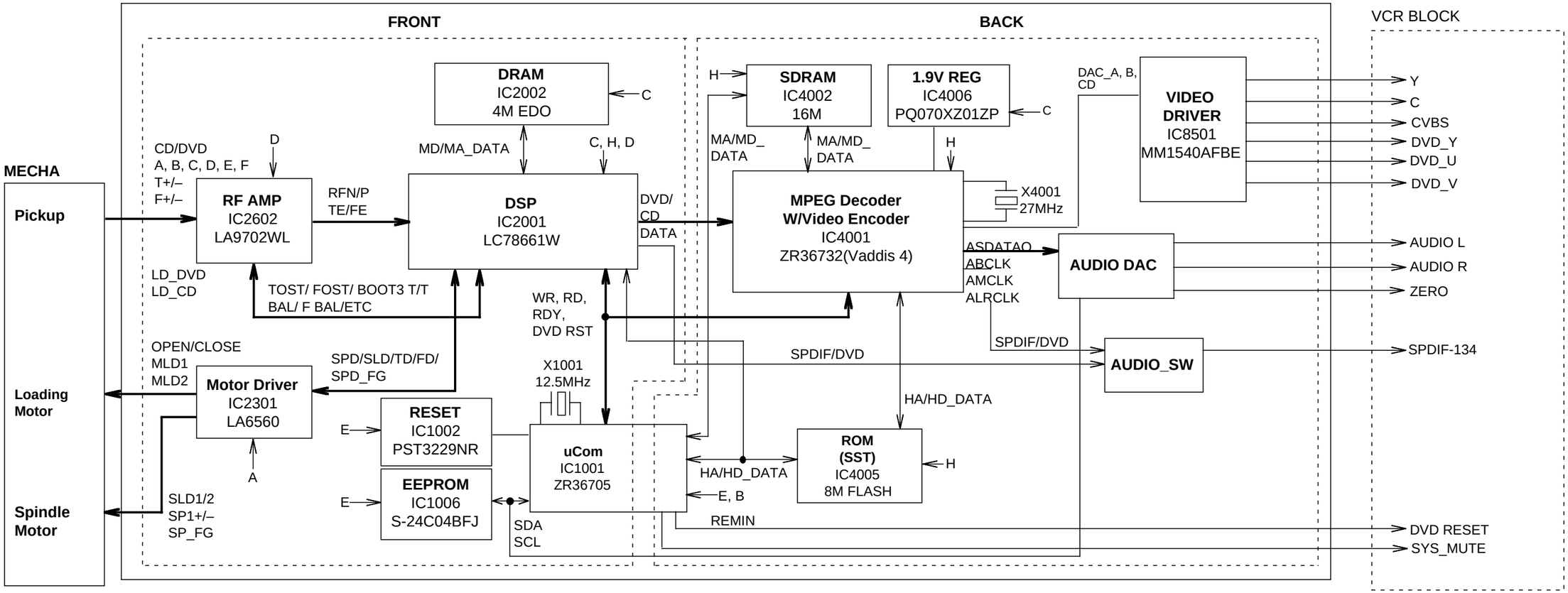
TROUBLESHOOTING GUIDE


NO PLAYBACK PICTURE OF Y.U.V OUT
Is there Y.U.V waveform at pin 16,18,20 of IC8501?
YES
Is there Y.U.V waveform at pin 8,10and 12 of CP8502?
YES
Check circuit around of J8008.
NO
NO
Check circuit around of D8501,D8502 and D8503.
Are there signals at pins 4,6,9,11,13 0f IC8501 ?
YES
Check circuit around of IC8501
NO
Are there signals at pins 102,103,105,106 of IC4001 ?
YES
Change IC8501
NO
Change IC4001 or DECK CD

TROUBLESHOOTING GUIDE

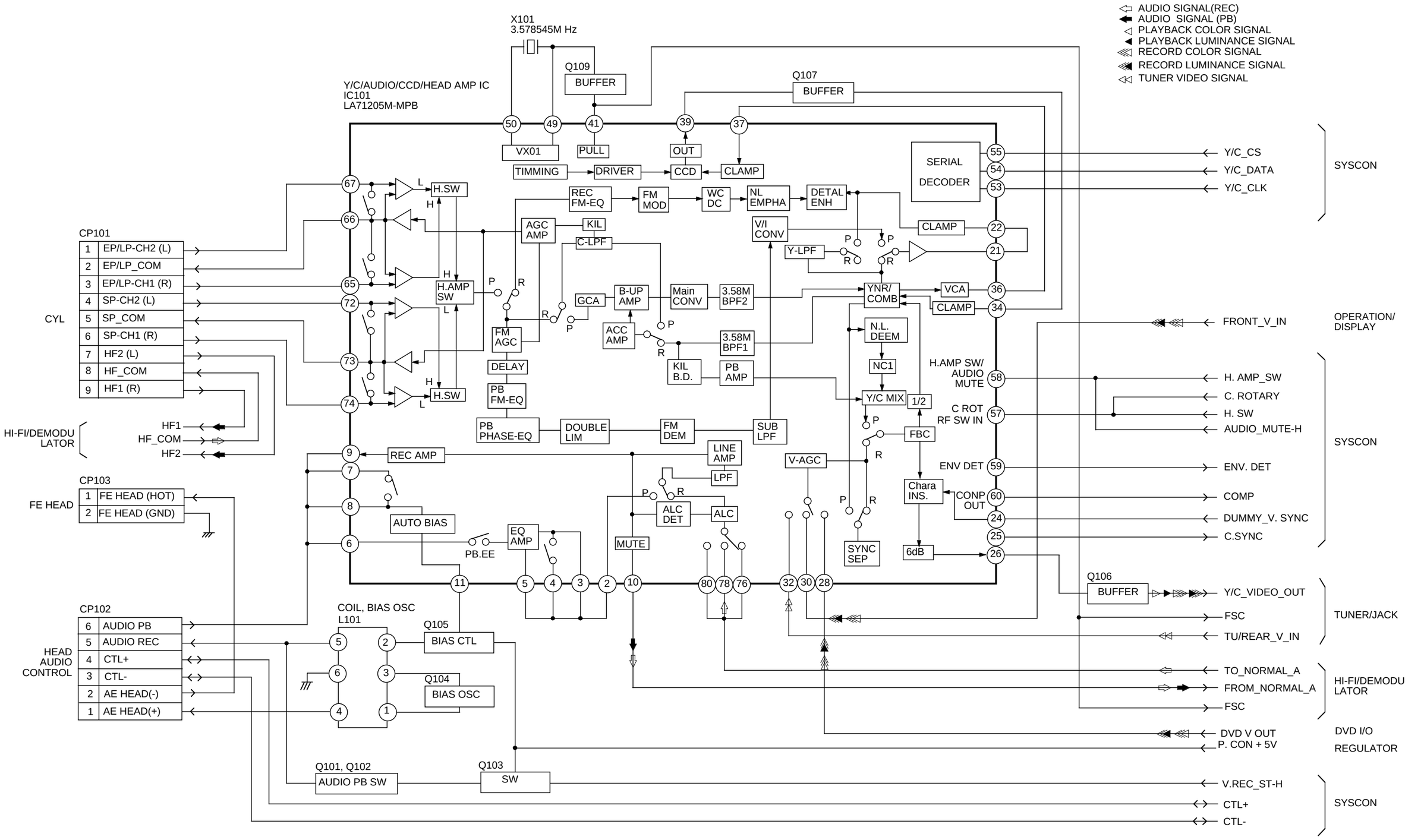

No playback picture of S-VIDEO jack
Are there Y signal at pin 23 and C signal at pin 25 of IC8501 ?
YES
Check D8504 and circuit around of D8505
NO
Are there waveform at pins 4,6,9,11,13 of IC8501 ?
YES
Change IC8501
NO
Are there waveform at pins 102,103,105,106 of IC4001 ?
YES
Check IC8501 and circuit around of IC4001
NO
Change IC4001

DVD FRONT/ BACK END BLOCK DIAGRAM



A P.CON+9V
B AT+D5V
C P.CON+D5V
D P.CON+A5V
E AT+D3.3V_M
F AT+3.3V
G -20V
H P.CON+D3.3VA (AT)

Y/C/AUDIO/CCD/HEAD AMP BLOCK DIAGRAM



SYSTEM CONTROL BLOCK DIAGRAM

SYSCON/TIMER/SERVO
IC1001 OEC0119B

REGULATOR
VCR_POWER_ON-H
VCR_POWER_ON-L
POWER_FAIL

DVD I/O
SYS_MUTE
RX
TX
DVD RESET

OPERATION/
DISPLAY
1G/VCR/T-REC_LED
FL_CLK
FL_DATA
FL_CS
DVD_LED
KEY-B
KEY-A
REM_IN

42	HEATER SW	
41	POWER ON-L	
37	POWER FAIL	
88	SYS MUTE	
65	RX	
80	OSC 2	X1001 10MHz
78	OSC 1	
64	TX	
75	X1	X3002 32.768KHz
76	X2	
44	HD RESET	
48	1G/VCR/T-REC LED	
89	FL CLK	
90	FL DATA	
83	FL CS	
46	DVD LED	
29	KEY-B	
30	KEY-A	
43	REM IN	

REGULATOR
AT 5.2V
CENT LED D3001
BOT SENSOR Q3008
EOT SENSOR Q3006
P.CON+5V
REEL SENS Q3001
REEL SENS Q3002

25	BOT-H	
26	EOT-H	
70	REEL-T	
69	REEL-S	

CAPSTAN DD UNIT

CP3001

11	CYL FG/PG	103 CYL SPEED UP
12	CYL DRIVE	104 DFG/PG
10	LDM CTL	107 DRUM PWM
5	I LIMIT	97 LD M CTL
9	CAP CTL	102 CAP FULL
1	CAP FG	108 CAP PWM
4	CAP.M F/R	84 CAP LIMIT
2	CAP VCO	9 CAP FG
8	LD/CY_VCO	98 CAP FWD-L
6	GND[M]	38 CFG IN 2

MOTOR_GND
AT+12.6V
CAP_VCO
DVD_POWER_ON H

45	DVD POWER ON H
28	MS SEN-A
27	MS SEN-B

REGULATOR
MS_SEN B Q3004
MS_SEN A Q3005
P.CON +5V

HIFI ENV	32	HIFI_ENV.DET
HIFI H.SW	106	HIFI_H.SW
ST SELECT	31	ST_SELECT
4 FSC OUT	21	X3003 14.3818MHz
4 FSC IN	22	
C.SYNC	111	C.SYNC
DUMMY V.SYNC	109	DUMMY_V.SYNC
VIDEO H.SW	105	H.SW
C.ROTARY	99	C.ROTARY
Y/C CS	93	Y/C CS
AUDIO MUTE-H	95	AUDIO_MUTE-H
H.AMP SW	100	H.AMP_SW
V.REC ST-H	96	V.REC_ST-H
V ENV	24	ENV.DET
CTL(+)	3	CTL+
CTL(-)	4	CTL-
Y/C DATA	54	Y/C_DATA
Y/C CLK	53	Y/C_CLK
COMP	101	COMP
AV SW1	92	AV_SW1
AV SW2	91	AV SW2
CV IN1	17	SW_V_ OUT
TUNER A MUTE-H	85	TUNER_A_MUTE-H
POWER MUTE L	87	POWER_MUTE-L
AFT S.CURVE	33	AFT-S.CURVE
CV OUT	19	VIDEO_OUT
VCR-H	86	TV/VCR
IIC CLK	61	IIC_CLK
IIC SDA	62	IIC_DATA
VIDEO MUTE H	40	VIDEO_MUTE-H

HI-FI/
DEMODULATOR

V.REC_ST-H
AUDIO_MUTE-H
IIC_CLK
IIC_DATA

Y/C/AUDIO/
CCD/HEAD AMP

TUNER/
JACK

TAB SW 35 — REC SAFTY SW

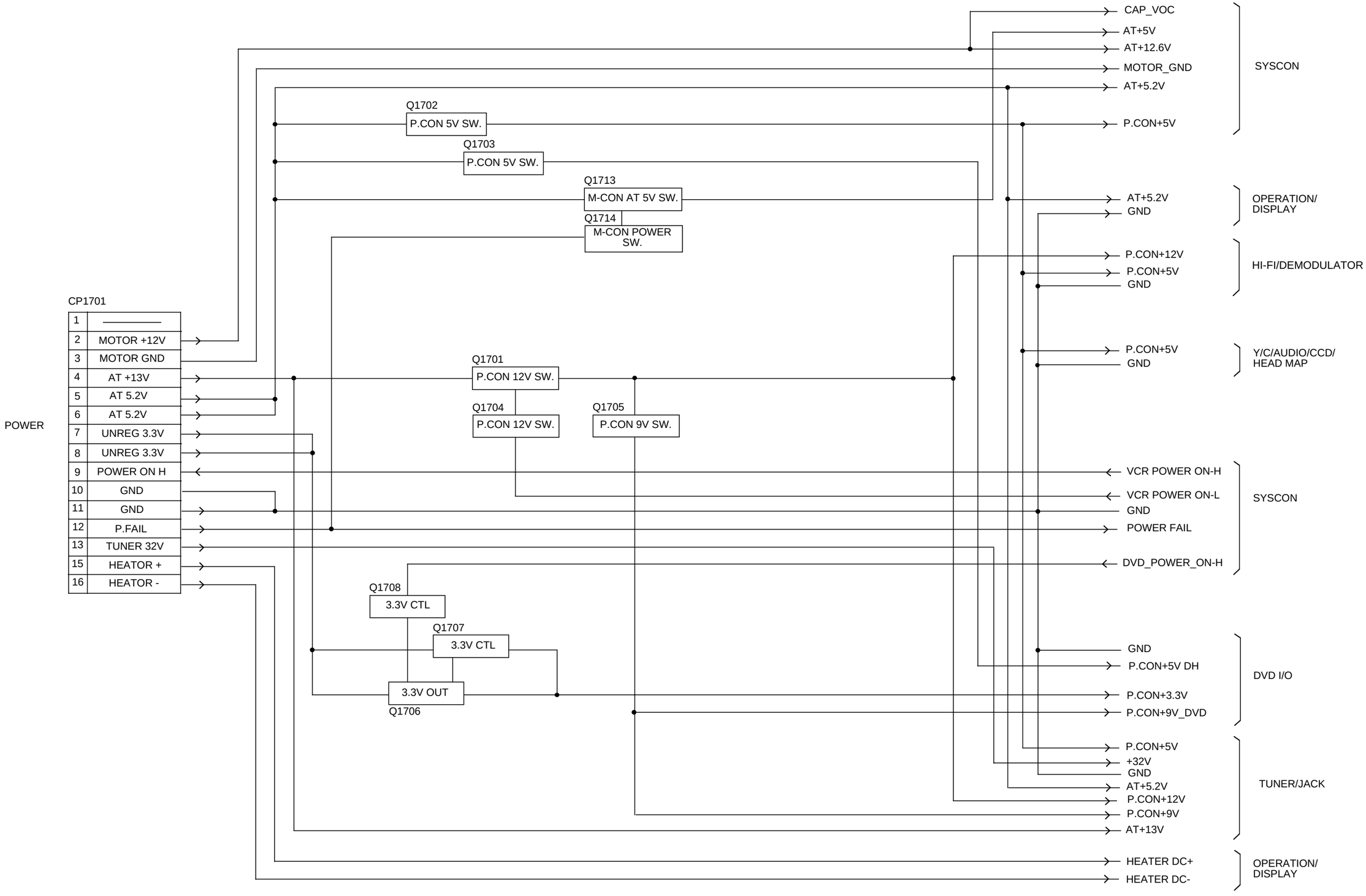
EEPROM IC3099 S-24C02BDP-1A
6 SCL
5 SDA

IC3003
PST3231NR
RESET 77 — 1 SYSTEM RESET 2 — AT+5V
3

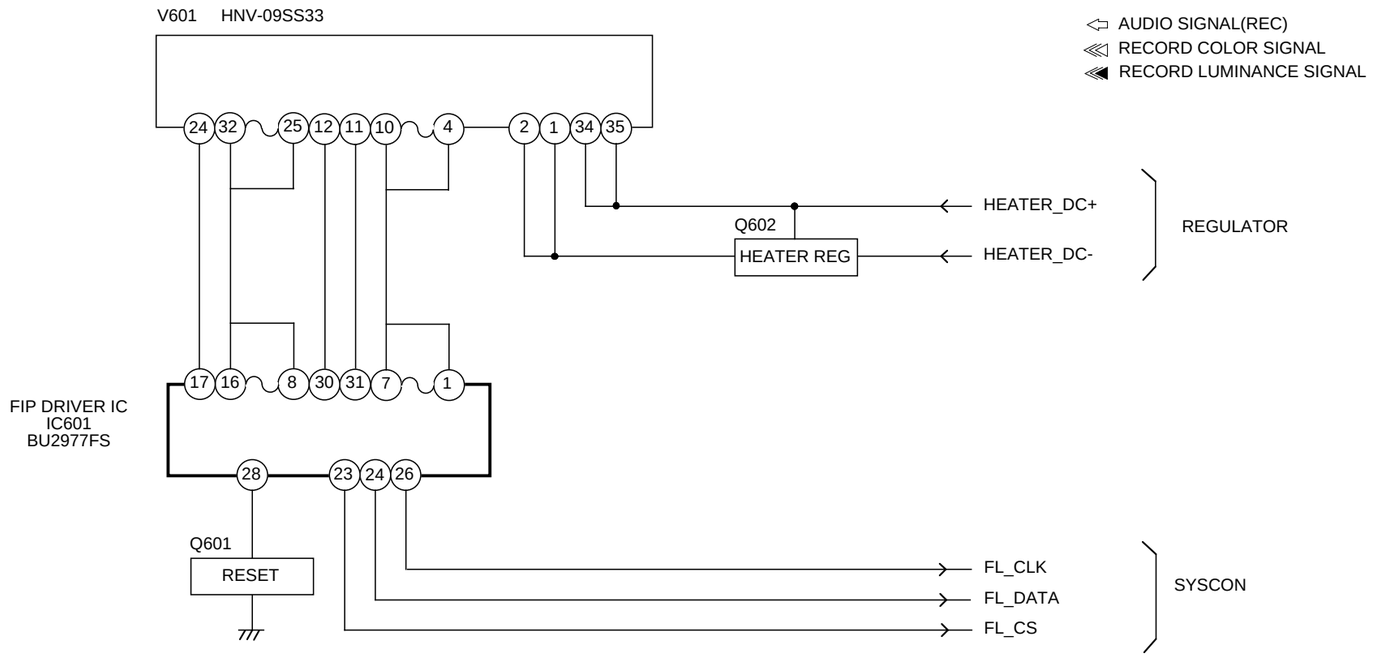
REGULATOR

PLAYBACK COLOR SIGNAL
PLAYBACK LUMINANCE SIGNAL
RECORD COLOR SIGNAL
RECORD LUMINANCE SIGNAL

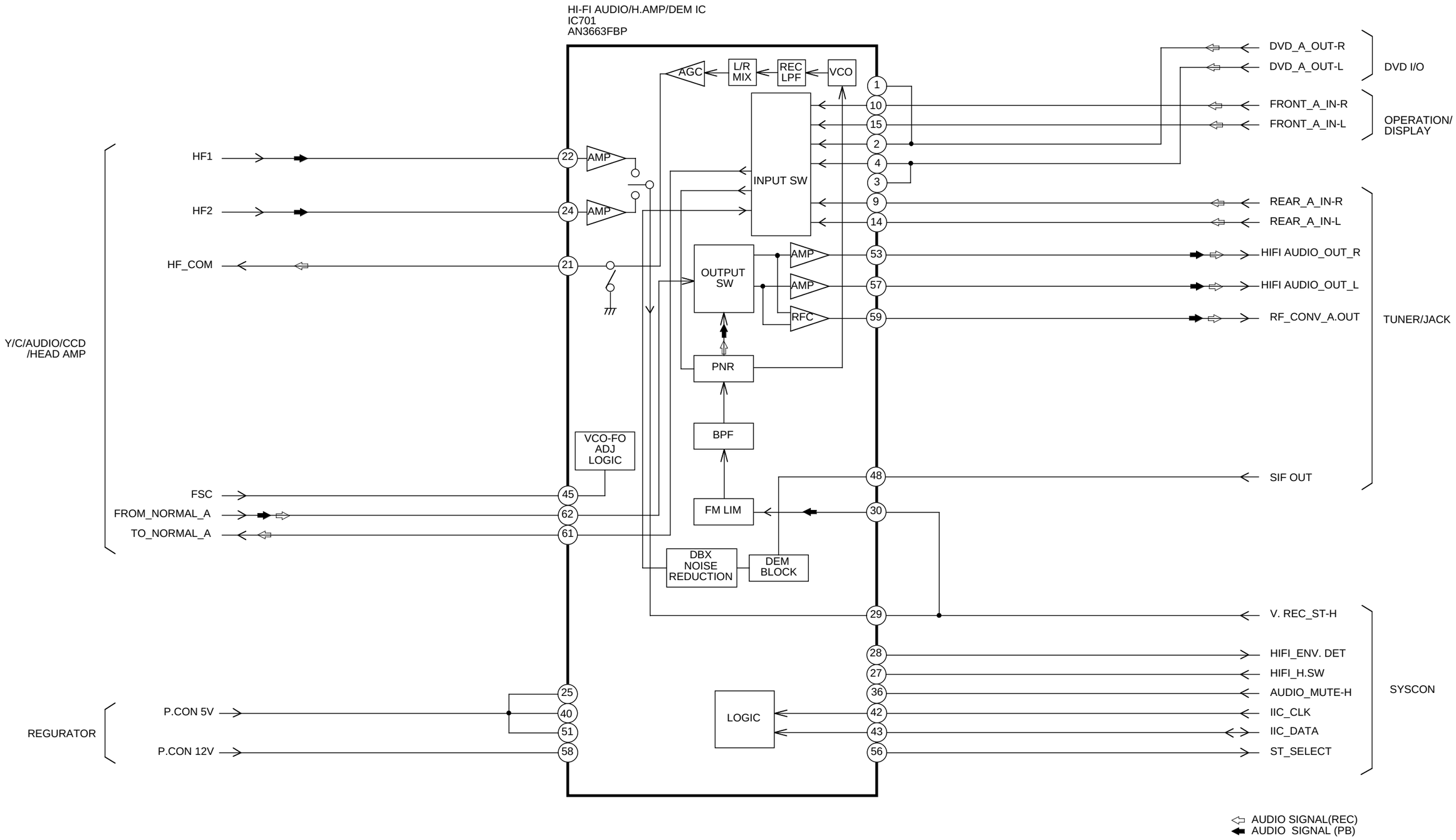
REGULATOR BLOCK DIAGRAM



OPERATION/DISPLAY BLOCK DIAGRAM



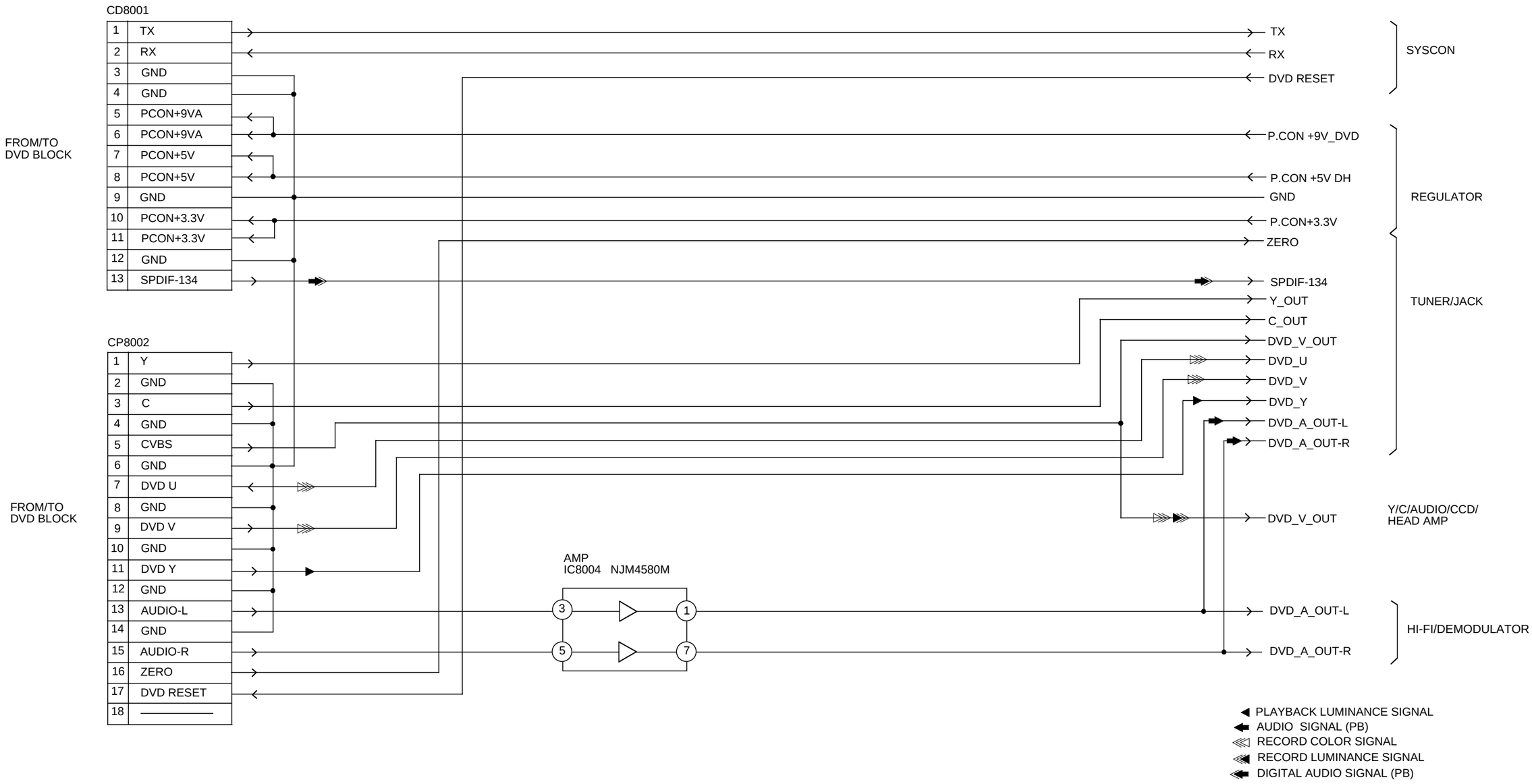
Hi-Fi/DEMODULATOR BLOCK DIAGRM



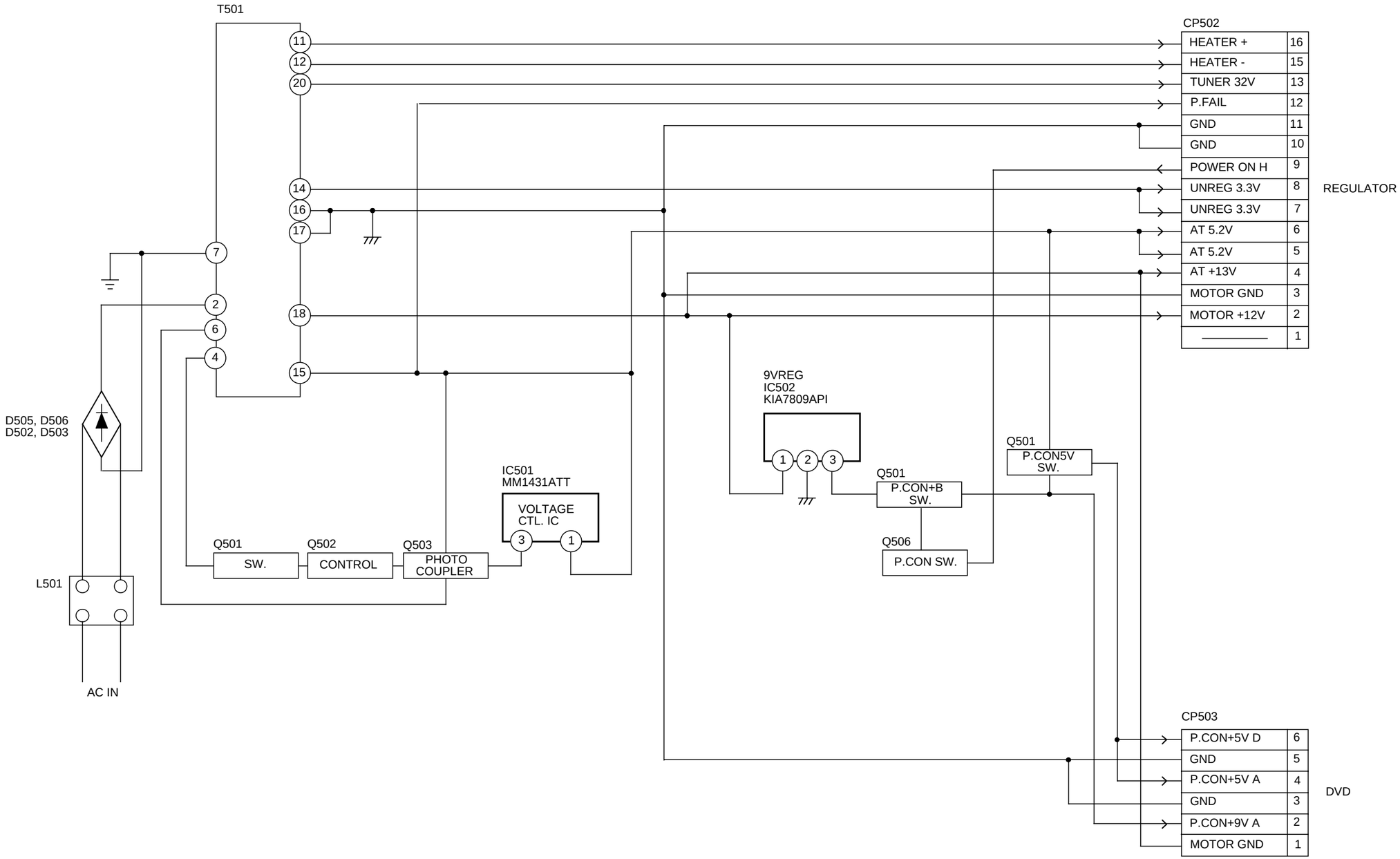
TUNER/JACK BLOCK DIAGRAM

SYSCON
REGULATOR
VIDEO MUTE H
VIDEO_OUT
SW V OUT
P. CON+12V
AT+13V
P.CON+5V
+32V
AT+5.2V
P.CON+9V
Q8004
BUFFER
Q8003
VIDEO MUTE SW
DVD AUDIO OUT J8009
REAR OUT JACK J8001
FRONT AV JACK VIDEO J8003
AUDIO L J8004
AUDIO R J8005
Y/C SEPA J8006
COAXAL DIGITAL OUT J8007
OPT TRANSSFORMER OS8001
COMPONENT OUT J8008
Q8001 D.AUDIO DRIVER
Q8002 D.AUDIO DRIVER
DVD_Y
DVD_U
DVD_V
SPDIF-134
C_OUT
Y_OUT
DVD I/O
REAR IN JACK J8002
L R
RF-SW SW301
TU301
Q8005 MUTE SW
Q8006 MUTE SW
Q8007 MUTE SW
Q301 RF MUTE SW
FRONT_V_IN
FSC
Y/C VIDEO OUT
TU/REAR_V_IN
FRONT_A_IN-R
FRONT_A_IN-L
REAR_A_IN-R
REAR_A_IN-L
HIFI AUDIO_OUT_R
HIFI AUDIO_OUT_L
RF_CONV_A. OUT
SIF OUT
Y/C/AUDIO/CCD HEAD AMP
HI-FI/ DEMODULATOR
TV/VCR
IIC_CLK
IIC_DATA
Q303 TUNER MUTE SW
TUNER_A_MUTE-H
POWER MUTE_L
AFT-S. CURVE
AV SA2
AV SW1
SYSCON
Q8013 MUTE SW
Q8012 MUTE SW
Q8015 MUTE SW
Q8014 MUTE SW
MUTE SW Q8011
MUTE SW Q8010
VCC
GND
VIDEO SW IC8005 NJM2533V
TU/REAR VIDEO IN SW IC8002 NJM2533V
AMP IC8003 NJM4580M
SW Q8008
AUDIO SW IC8001 CD4053BNSR
AUDIO SIGNAL(REC)
AUDIO SIGNAL (PB)
PLAYBACK COLOR SIGNAL
PLAYBACK LUMINANCE SIGNAL
RECORD COLOR SIGNAL
RECORD LUMINANCE SIGNAL
TUNER VIDEO SIGNAL
DIGITAL AUDIO SIGNAL (PB)
DVD_V_OUT
DVD_A_OUT-R
DVD_A_OUT-L
ZERO
DVD I/O
SYS_MUTE
SYSCON

DVD IN/OUT BLOCK DIAGRAM

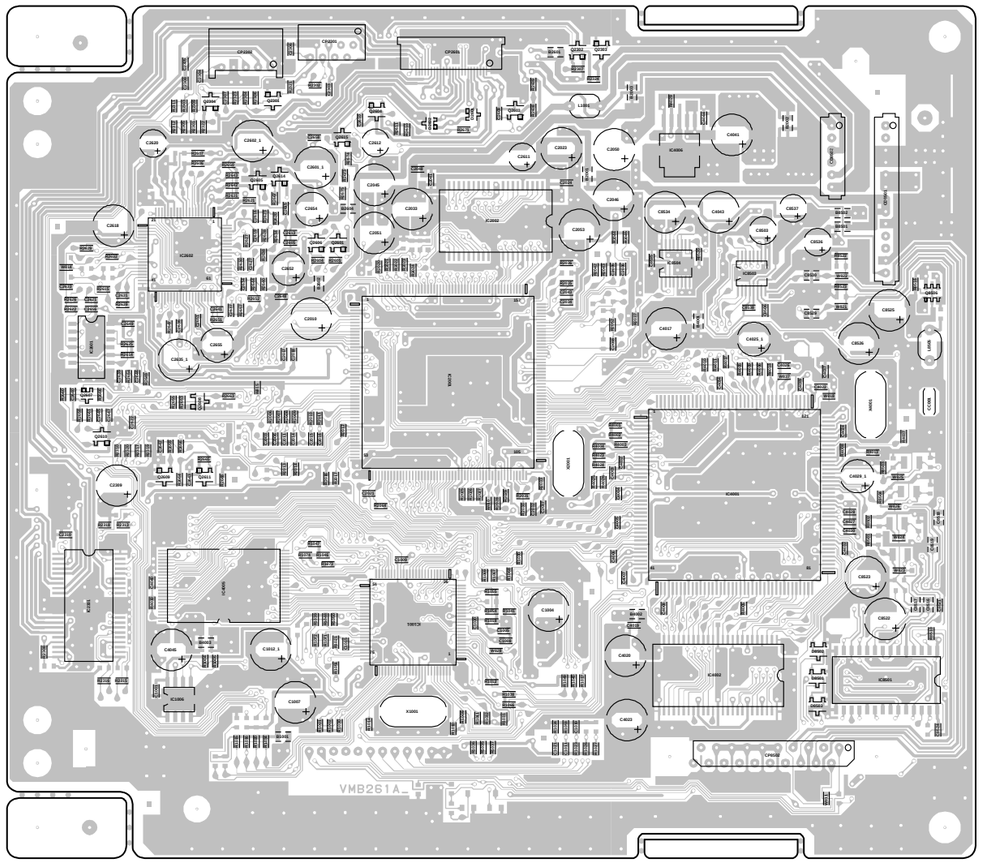


POWER BLOCK DIAGRAM

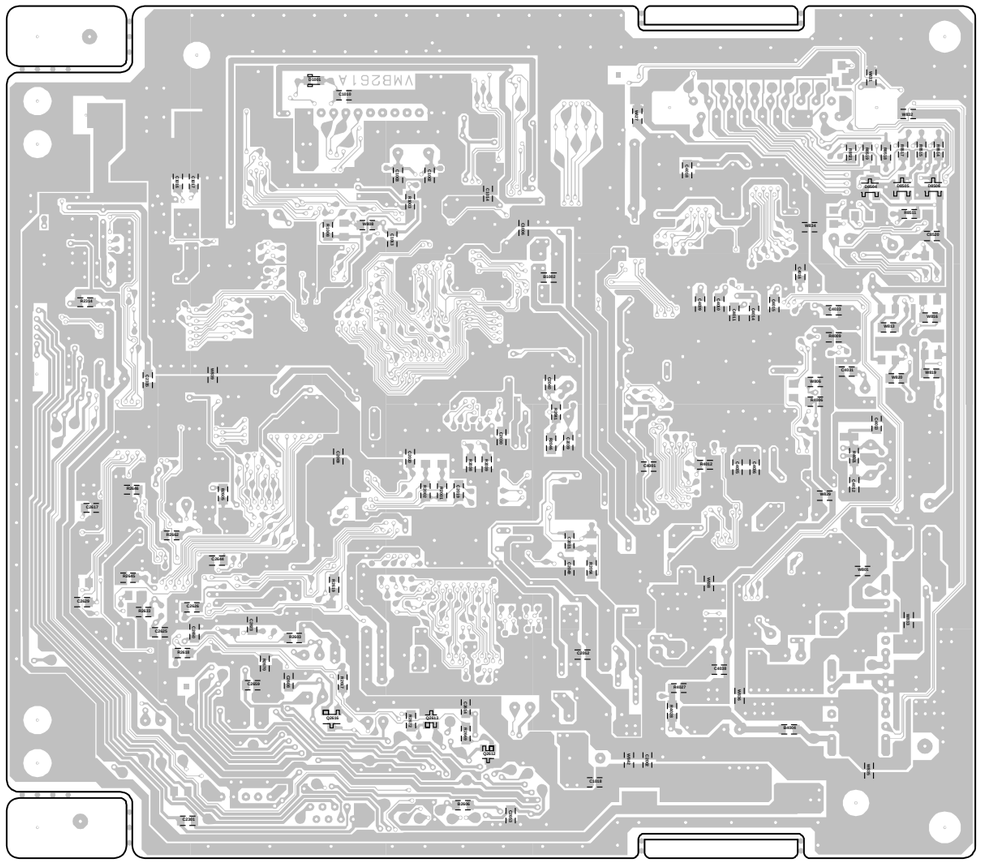


PRINTED CIRCUIT BOARDS

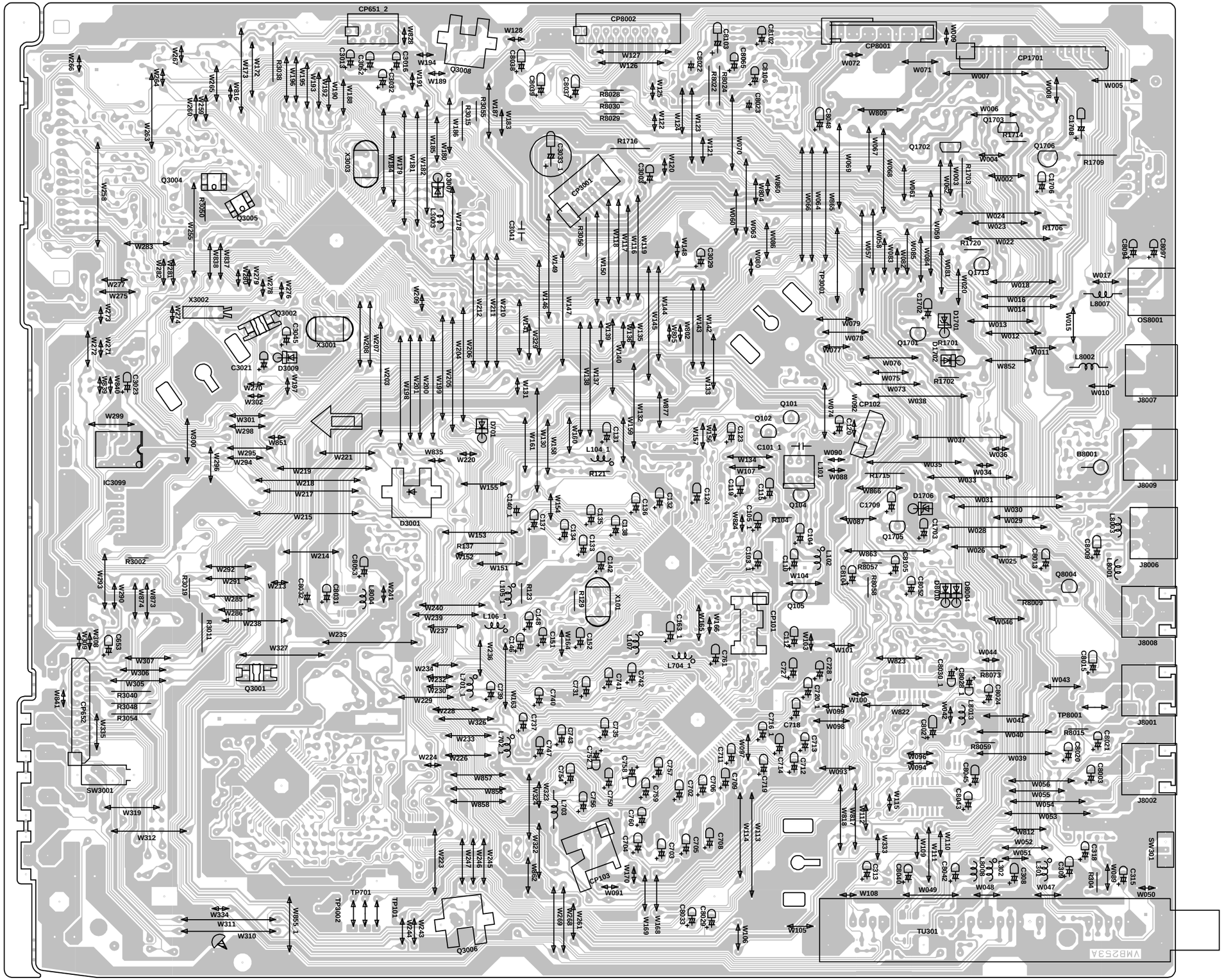
DVD (TOP SIDE)



DVD (BOTTOM SIDE)



PRINTED CIRCUIT BOARDS
VCR (INSERTED PARTS)
SOLDER SIDE

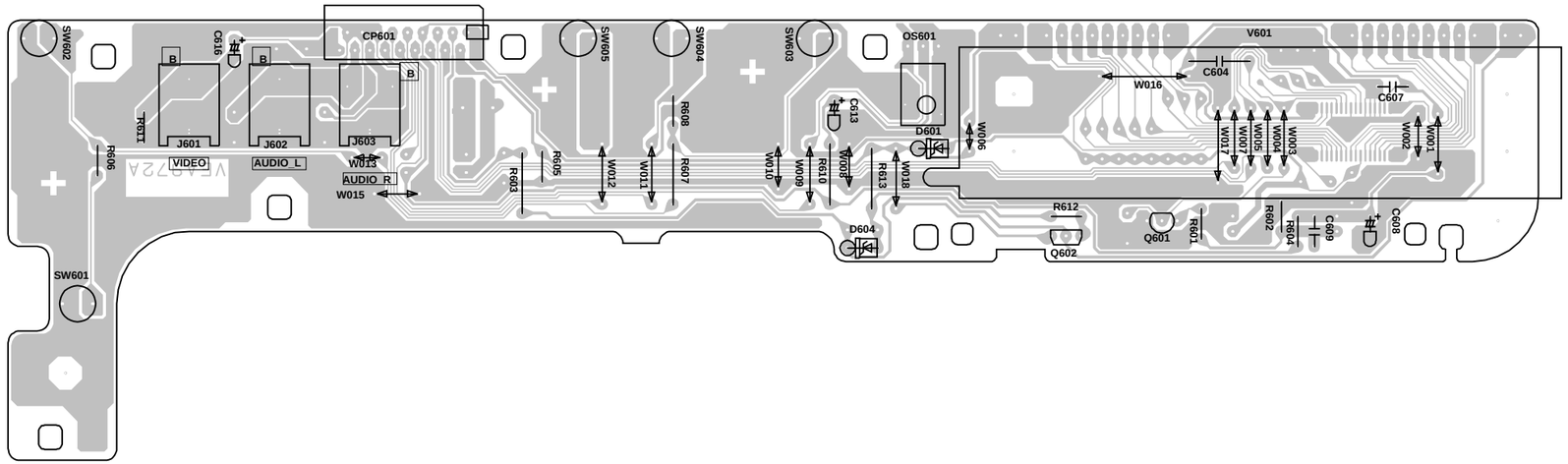


PRINTED CIRCUIT BOARDS
VCR (CHIP MOUNTED PARTS)
SOLDER SIDE

VMB253A
R302
C304
C303
C8041
IC8002
C316
Q303
R301
Q301
R305
Q8008
R8017
Q8006
R8016
Q8005
R8001
R8035
R8032
R8038
R8040
R8014
R8010
Q8003
IC8001
C8054
R8075
R8060
R8043
R8055
R8074
IC8003
R8076
R8061
R8034
C8026
R8072
Q8015
R8046
R8045
Q8012
Q8014
Q8010
R8082
Q8013
Q8011
R8068
R8033
R8069
R8031
R8011
R8002
R8008
C8012
R8065
R8067
Q8001
R8003
C8010
R8004
C8011
R8005
Q8002
R8006
R8007
Q8007
Q1704
C8008
C8098
C8096
C8095
Q1714
R1713
R1710
R1711
Q1707
Q1708
R1708
R704
C762
R703
R702
R701
R719
C763
C755
R718
C707
R712
R711
C721
C701
C710
R705
R706
C715
R707
R708
R709
R710
C717
1
17
49
33
IC701
R720
C749
C751
C746
R717
C744
C748
C734
R716
C736
R714
C738
C732
C725
C729
C726
C722
C724
C723
C730
C158
C154
C165
C162
C169
C166
R142
C156
C147
R133
R131
C145
Q109
R132
61
41
21
IC101
R127
C144
R122
C143
C141
Q107
C155
R108
C109
C116
R110
R111
C106
R107
C107
C114
R113
C121
R115
C122
R112
R114
C118
C126
C130
C139
C125
R124
R117
R116
R106
C128
C127
R119
R105
Q106
C172
R120
C108
Q103
R101
R102
R103
R139
R138
R3016
C3005
IC8005
C8049
Q667
R3029
R3028
C3030
R3013
R3045
R3044
C3014
R3057
R3033
C3053
R3049
C3024
C3025
C3050
R3062
R3051
IC3003
C3009
R3034
R3006
C3047
C3046
R3037
R136
R3032
R3031
R3001
R3014
C3010
R3007
R3017
C3007
C3004
R3024
R3012
R3020
C3027
C3015
R3027
C3019
C3018
R3022
C3001
C3031
R3063
C3038
R3043
C3049
R3053
C3044
R3025
R3010
C3034
85
57
29
IC3001
C3061
C3020
R3003
C3008
R3008
C3065
C3017
R3009
R3026
C3039
C3036
R3083
R3087
C3022
R3030
R3004
C3006
R3039
W878
Q666
R3047
R3046
C8081
C8070
R8049
R8023
R8051
C8064
R8020
IC8004
R8054
R8056
R8021
C8079
C8090
R8027
C8025
R8048
C8077
R8050
R8052
R8053
R8047
R8025
R8026

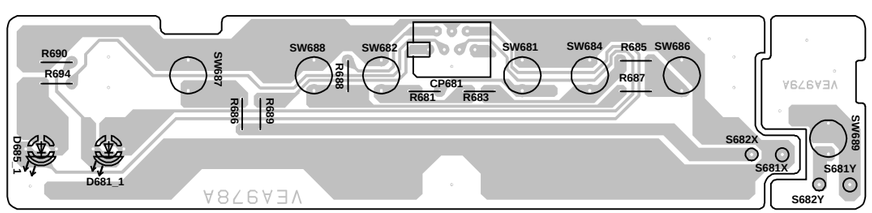
PRINTED CIRCUIT BOARDS

DISPLAY (INSERTED PARTS)
SOLDER SIDE

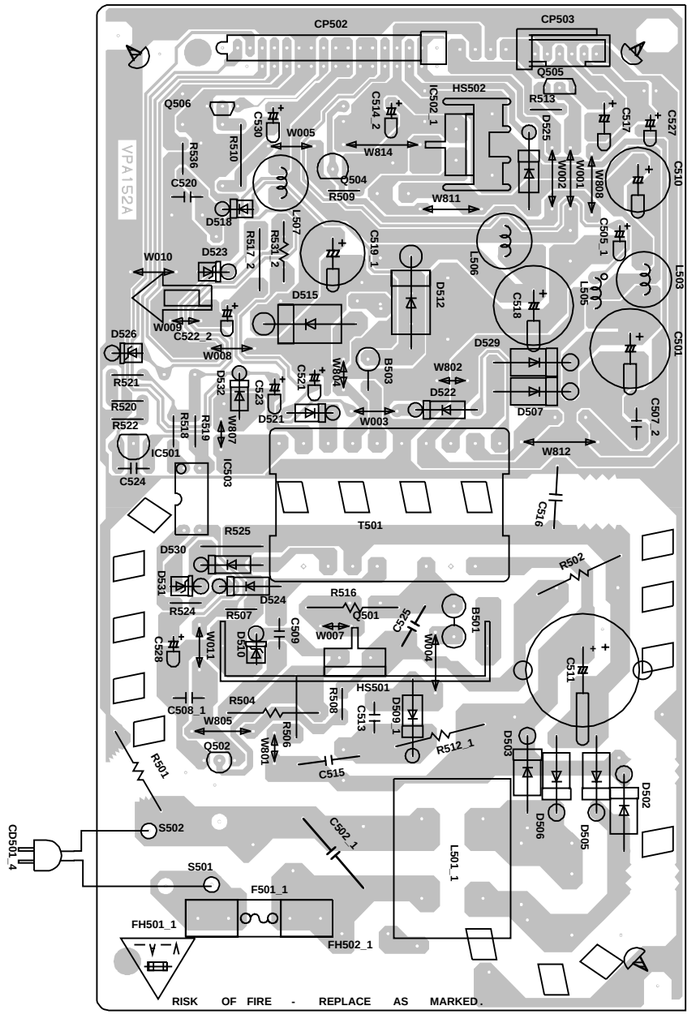


DISPLAY (CHIP MOUNTED PARTS)
SOLDER SIDE

OPERATION1/OPERATION2
SOLDER SIDE

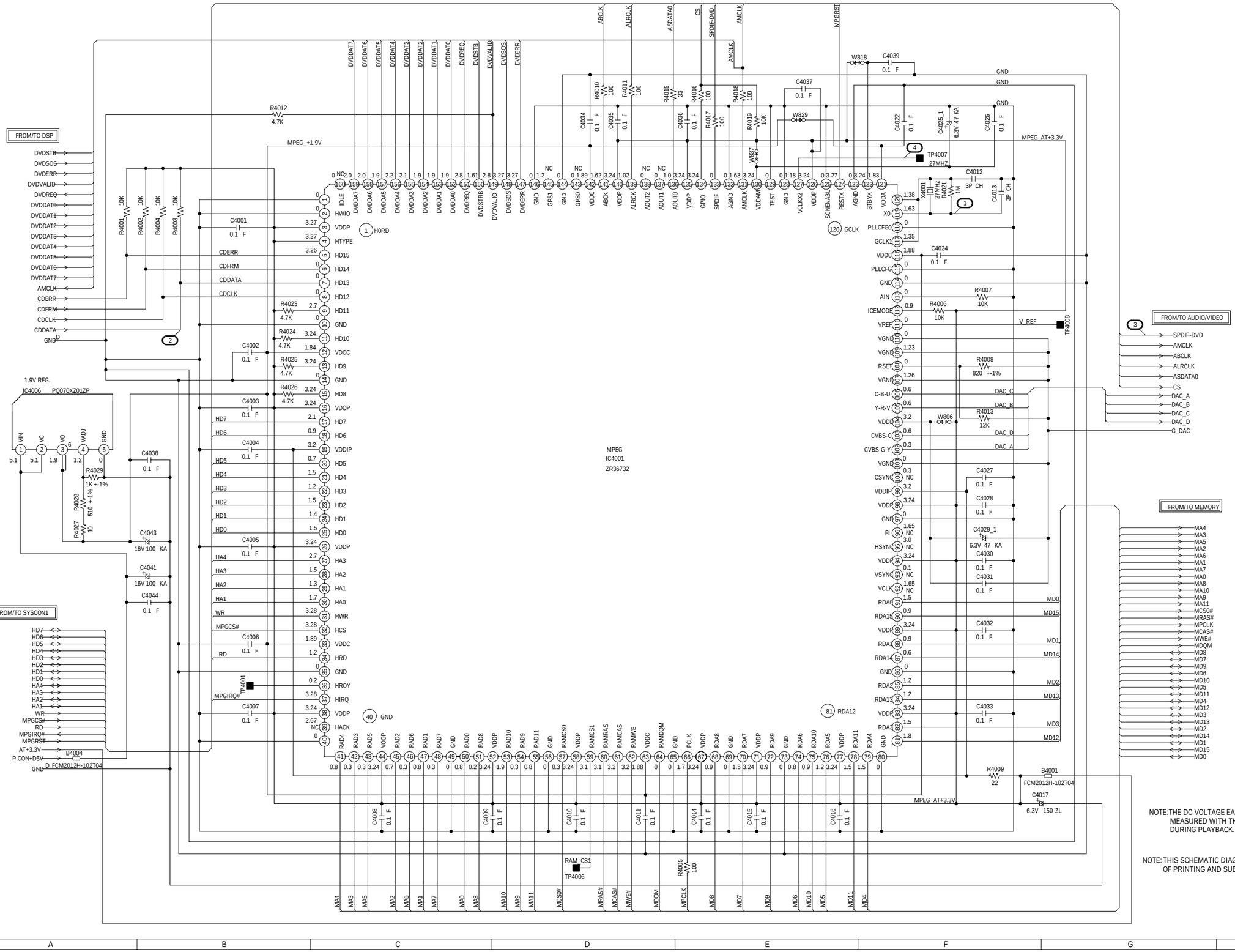


POWER
SOLDER SIDE



MPEG SCHEMATIC DIAGRAM

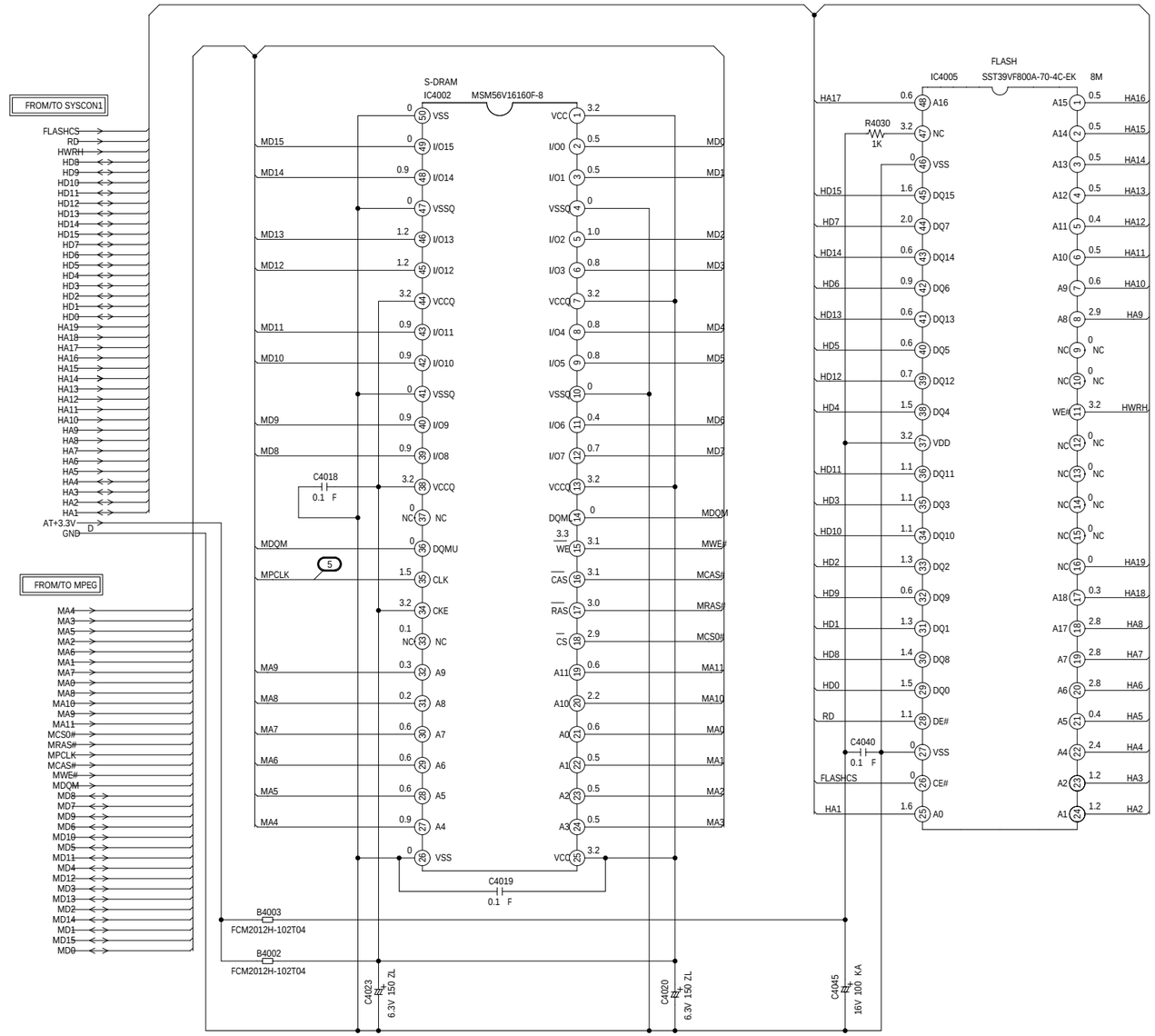
(DVD PCB)



H-1 H-2

MEMORY SCHEMATIC DIAGRAM

(DVD PCB)



NOTE: THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE。

NOTE: THE DC VOLTAGE EACH PART WAS MEASURED WITH THE DIGITAL TESTER DURING PLAYBACK.

PCB130
VMB261

SYSCON1 SCHEMATIC DIAGRAM (DVD PCB)

FROM/TO POWER
CD8502(CP8005)
CU262501
P.CON+5V D 1
GND 2
P.CON+5V A 3
GND 4
P.CON+9V A 5
MOTOR GND 6

FROM/TO DVD I/O
CD8501(CP8001)
CU2D3201
TX 1
RX 2
GND 3
GND 4
P.CON+9V 5
P.CON+9V 6
P.CON+D5V 7
P.CON+D5V 8
GND 9
P.CON+3.3V 10
P.CON+3.3V 11
GND 12
SPDIF-134 13

FROM/TO MOTOR DRIVE
GND[A]
GND[M]
D GND
P.CON+9V
AT+3.3V
SPD_FG
DMUTE
OPEN
CLOSE
LSW
CLS_SW
OPN_SW
P.CON+A5V

FROM/TO MPEG
HD7 HD6 HD5 HD4 HD3 HD2 HD1 HD0 HA4 HA3 HA2 HA1
WR
MPGCS#
RD
MPGIRQ#
MPGRST
AT+3.3V
P.CON+D5V
D GND

FROM/TO MEMORY
FLASHCS
RD
HWRH
HD8 HD9 HD10 HD11 HD12 HD13 HD14 HD15 HD7 HD6 HD5 HD4 HD3 HD2 HD1 HD0
HA19 HA18 HA17 HA16 HA15 HA14 HA13 HA12 HA11 HA10 HA9 HA8 HA7 HA6 HA5 HA4 HA3 HA2 HA1
AT+3.3V
GND

FROM/TO DSP
D GND
GND[A]
P.CON+D5V
P.CON+A5V
AT+3.3V
HD7 HD6 HD5 HD4 HD3 HD2 HD1 HD0 HA12 HA11 HA10 HA9 HA8 HA7 HA6 HA5 HA4 HA3 HA2 HA1 HA0
WR
RD
RDY
DVDRST
WRQ
DVDCS
DVDIRQ

FROM/TO READ CHANNEL
P.CON+A5V
GND[A]

FROM/TO AUDIO/VIDEO
GND
GND[A]
AT+D5V
CPU_RESET
VCC+9V
SYS_MUTE
SCL
SDA
SPDIF
CD/DVD
AT+3.3V

EEPROM IC1006 S-24C04BFJ-TB
A0 A1 A2 A3 VCC TEST SCL SDA
C1001 0.1 F
C1012_1 16V 47 KA
C1016 100P CH
C1017 100P CH
R1004 4.7K
R1005 4.7K

B1001 FCM2012H-102T04
B1002 FCM2012H-102T04
AT+3.3V_M
L1001 2.2uH 0305
C1018 B 1
L8507 W5T29X7.5X19
W835

C1007 6.3V 220 KA
C1013 0.1 F
R1051 4.7K
R1021 4.7K
W808
R1039 10K
R1048 10K
C1015 0.1 F
R1071 33
R1072 33
R1050 4.7K

SCL SDA
HA19 HA18 HA17 HA16 HA15 HA14 HA13 HA12 HA11 HA10 HA9 HA8 HA7 HA6 HA5 HA4 HA3 HA2 HA1 HA0
HD7 HD6 HD5 HD4 HD3 HD2 HD1 HD0 HD15 HD14 HD13 HD12 HD11 HD10

SI2 SO2 VCC+9V AT+D5V AT+3.3V SPDIF GND[A]

R1015 10K
R1016 10K
R1020 10K
R1034 10K
D1001 MCL4148
TP1003 TP1001 TP1004 TP1002
SO2_82 SI2 SO1 SI1
C1010 470P CH

SYSCON IC1001 ZR36705

| | | |

DSP SCHEMATIC DIAGRAM (DVD PCB)

DRAM
IC2002
MSM5416258B-30

DSP
IC2001
LC78661W

FROM/TO SYSCON1

FROM/TO MOTOR DRIVE

FROM/TO READ CHANNEL

FROM/TO AUDIO/VIDEO

FROM/TO MPEG

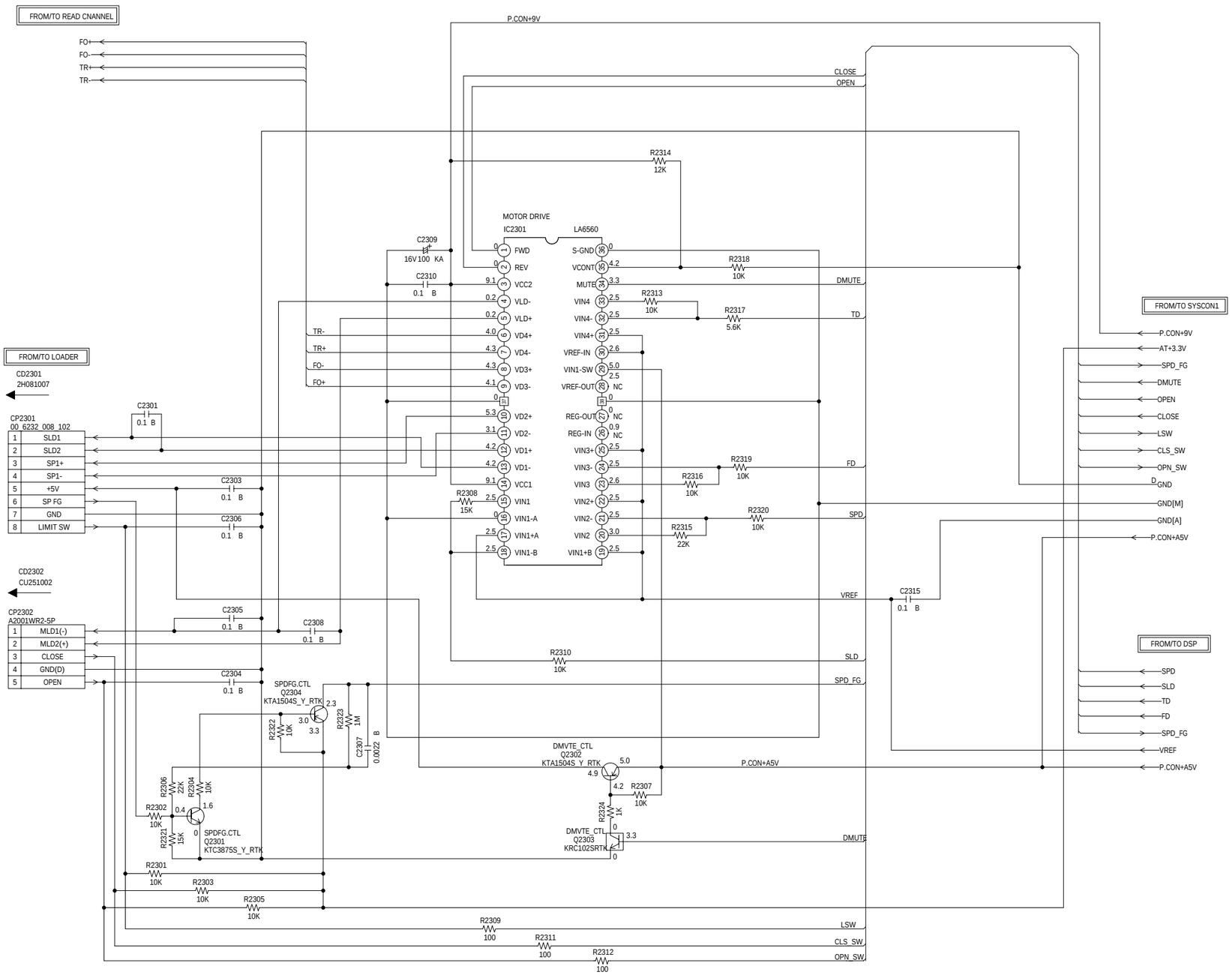
PCB130
VMB261

NOTE:THE DC VOLTAGE EACH PART WAS MEASURED WITH THE DIGITAL TESTER DURING PLAYBACK.

NOTE: THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE 。

MOTOR DRIVE SCHEMATIC DIAGRAM

(DVD PCB)



NOTE: THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE。

NOTE:THE DC VOLTAGE EACH PART WAS MEASURED WITH THE DIGITAL TESTER DURING PLAYBACK.

CAUTION: DIGITAL TRANSISTOR

PCB130
VMB261

READ CHANNEL SCHEMATIC DIAGRAM (DVD PCB)

DVD LOADER
DK4001
DVD-KDR717SK
FROM/TO LOADER
CD2601
2H002102
0.5mm PITCH FFC
CP2601
08_6210_024_340

READ CHANNEL
IC2602
LA9702WL

FROM/TO MOTOR DRIVE
FO+
FO-
TR+
TR-

FROM/TO SYSCON1
P.CON+A5V
GND[A]

FROM/TO DSP
VREF
TOST
FOST
BOOT3T
RFVCA
TBAL
FBAL
SGC
ADPH
XHTR
BH
BHDC
RFP
RFN
ADWO
ADTE
TE
ADFE
ADRREC
DEFECTO
DEFECTI
ADBCA
LDON1
CDX4
CDX2
LDON2
DPD_TE
XQBH
DEFINH

NOTE:THE DC VOLTAGE EACH PART WAS MEASURED WITH THE DIGITAL TESTER DURING PLAYBACK.

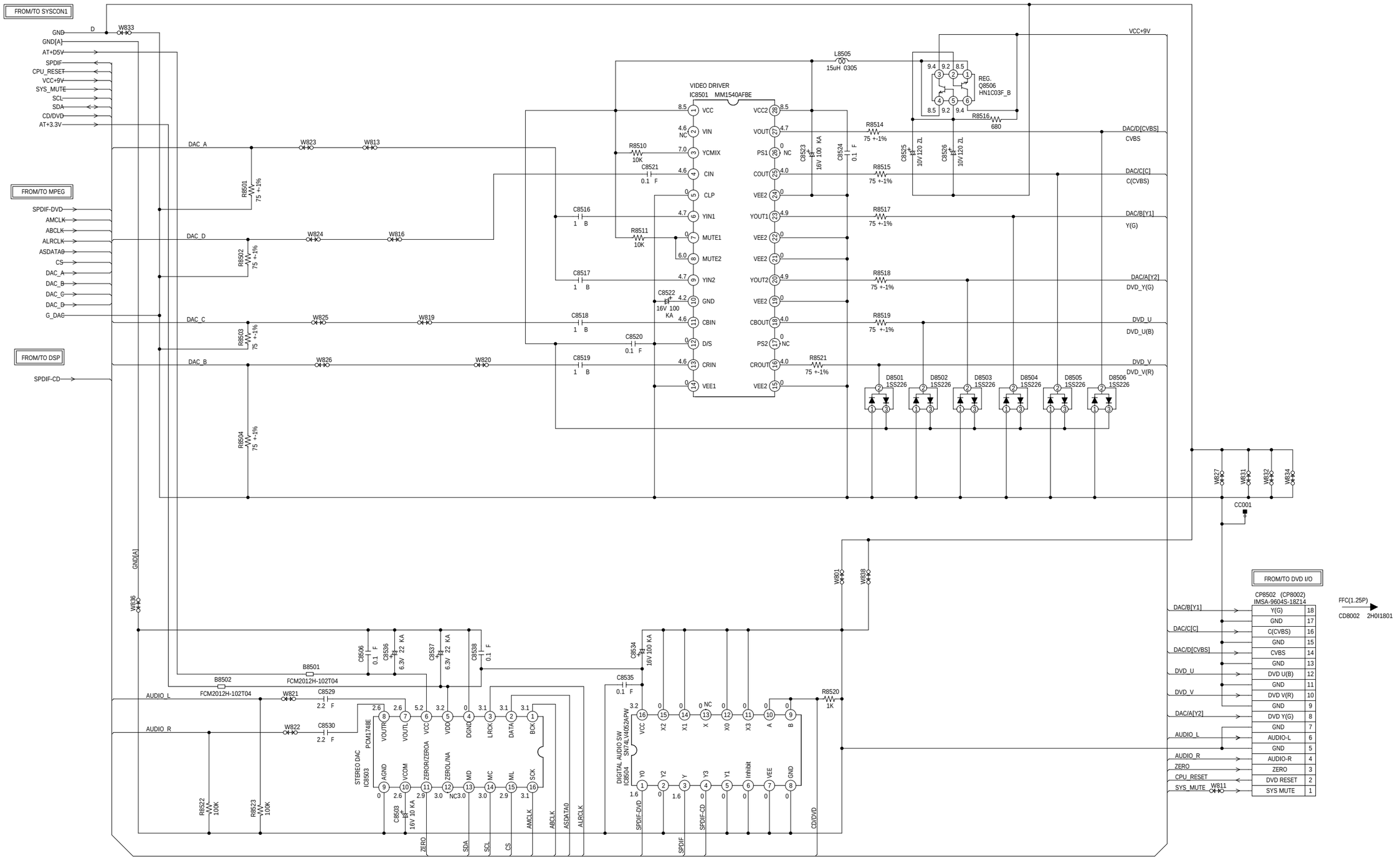
NOTE:THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE 。

CAUTION: SINCE THESE PARTS MARKED BY ⚠ ARE CRITICAL FOR SAFETY,USE ONES DESCRIBED IN PARTS LIST ONLY 。

ATTENTION: LES PIECES REPAREES PAR UN ⚠ ETANT DANGEREUSES AN POINT DE VUE SECURITE N'UTILISER QUE CELLS DECRITES DANS LA NOMENCLATURE DES PIECES。

PCB130
VMB261

AUDIO/VIDEO SCHEMATIC DIAGRAM (DVD PCB)



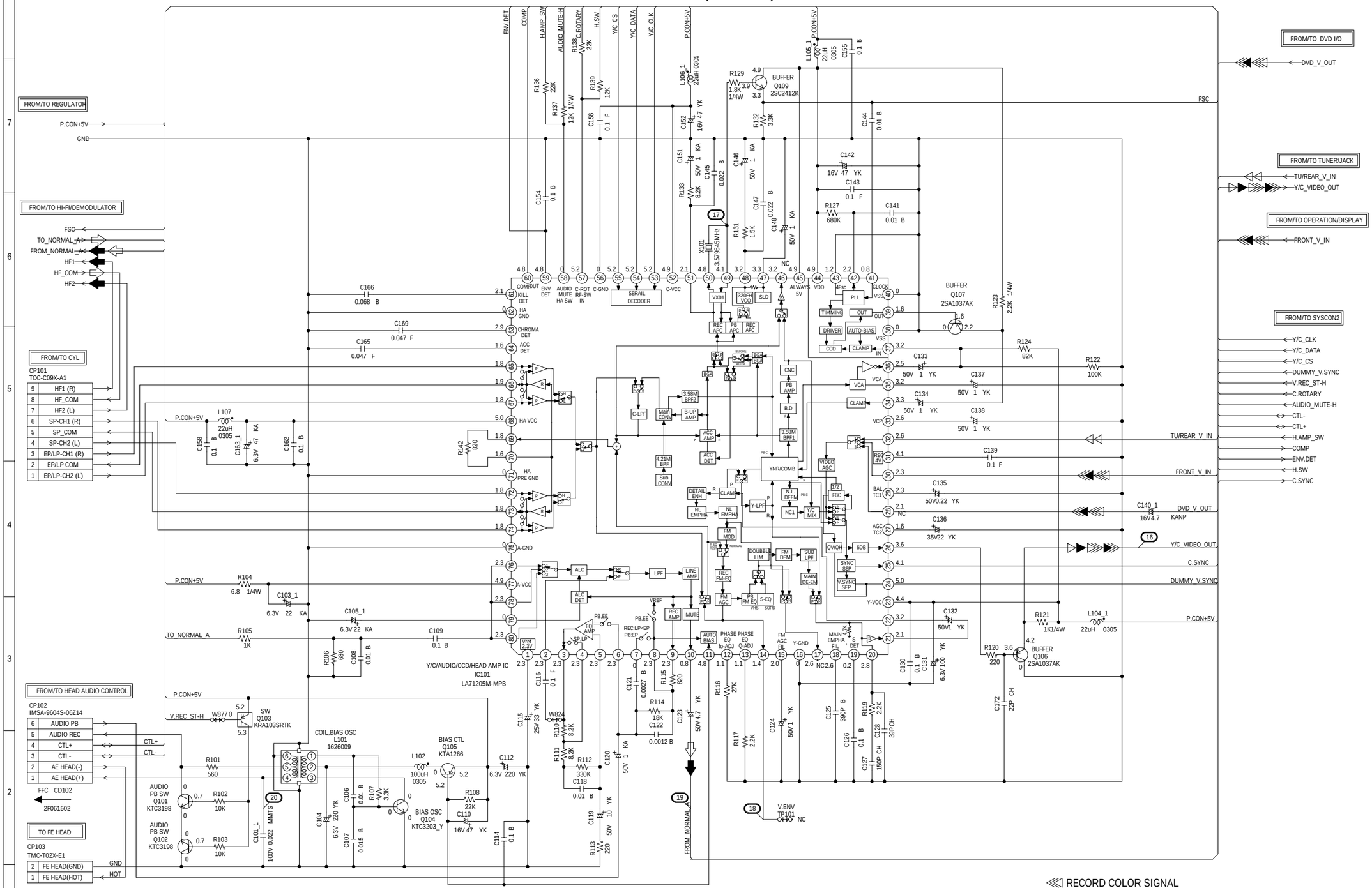
NOTE:THE DC VOLTAGE EACH PART WAS MEASURED WITH THE DIGITAL TESTER DURING PLAYBACK.

NOTE: THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE 。

PCB130
VMB261

Y/C/AUDIO/CCD/HEAD AMP SCHEMATIC DIAGRAM

(VCR PCB)



SYSCON2 SCHEMATIC DIAGRAM (VCR PCB)

FROM/TO REGULATOR

DVD_POWER_CTL
CAP_VCO
AT+12.6_V
P.CON+5V
AT+5.2V
AT+5V[M-CON]
VCR_POWER_ON-H
VCR_POWER_ON-L
POWER_FAIL
GND
MOTOR_GND

FROM/TO DECK

CP3001 TMC-J12P-B2

1	CAP FG
2	CAP VCO
3	VCC
4	CAP.M/F/R
5	I LIMIT
6	MOTOR GND
7	GND
8	LD/CY VCO
9	CAP CTL
10	LDM CTL
11	CYL FG/PG
12	CYL CTL

FROM/TO DVD I/O

SYS_MUTE
DVD_RESET
TX
RX

SYSCON/TIMER/SERVO
IC3001
OEC0125A

FROM/TO Y/C/AUDIO/CCD/H.AMP

DUMMY_V.SYNC
C.SYNC
V.REC_ST-H
C.ROTARY
AUDIO_MUTE-H
CTL-
CTL+
H.AMP_SW
COMP
ENV.DET
H.SW
Y/C_CS
Y/C_DATA
Y/C_CLK

FROM/TO TUNER/JACK

SW_V_OUT
AV_SW1
AV_SW2
SCL
SDA
AFT-S.CURVE
TV/VCR
VIDEO_OUT
TU_A_MUTE-H
POWER_MUTE-L
VIDEO_MUTE-H

FROM/TO HI-FI/DEMODULATOR

V.REC_ST-H
HIFI_ENV.DET
HIFI_H.SW
AUDIO_MUTE-H
SCL
SDA
ST_SELECT

FROM/TO OPERATION1/DISPLAY

FL_CLK
FL_DATA
VSC_SW
DVD_LED
VCR_LED
KEY-A
KEY-B
REM_IN
SEG_10

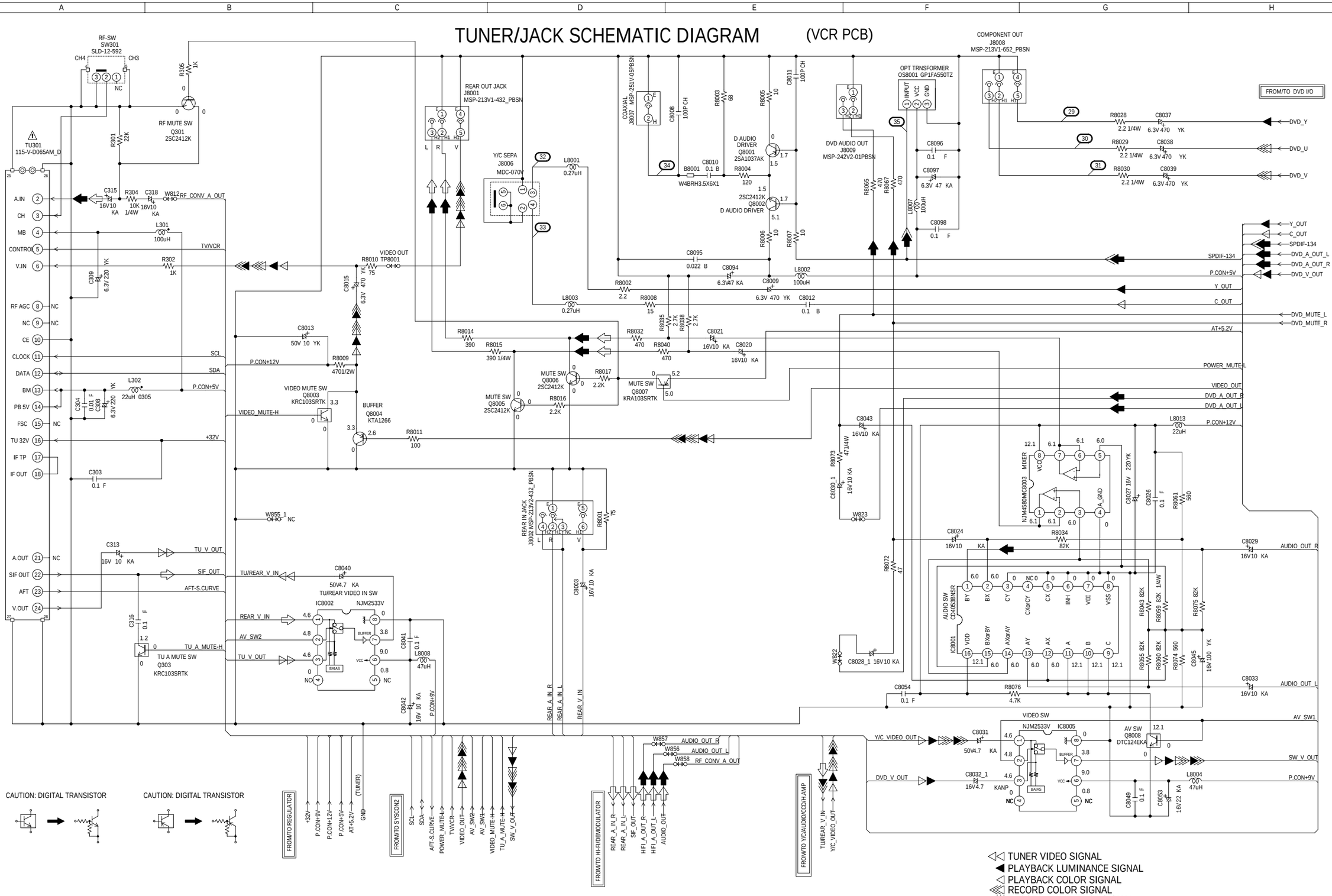
NOTE:THE DC VOLTAGE EACH PART WAS MEASURED WITH THE DIGITAL TESTER DURING PLAYBACK.

NOTE: THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE。

◀◀ RECORD LUMINANCE SIGNAL
◀◀ RECORD COLOR SIGNAL
◀ PLAYBACK LUMINANCE SIGNAL
◁ PLAYBACK COLOR SIGNAL

PCB010
VMB253

TUNER/JACK SCHEMATIC DIAGRAM (VCR PCB)



NOTE: THE DC VOLTAGE EACH PART WAS MEASURED WITH THE DIGITAL TESTER DURING PLAYBACK.

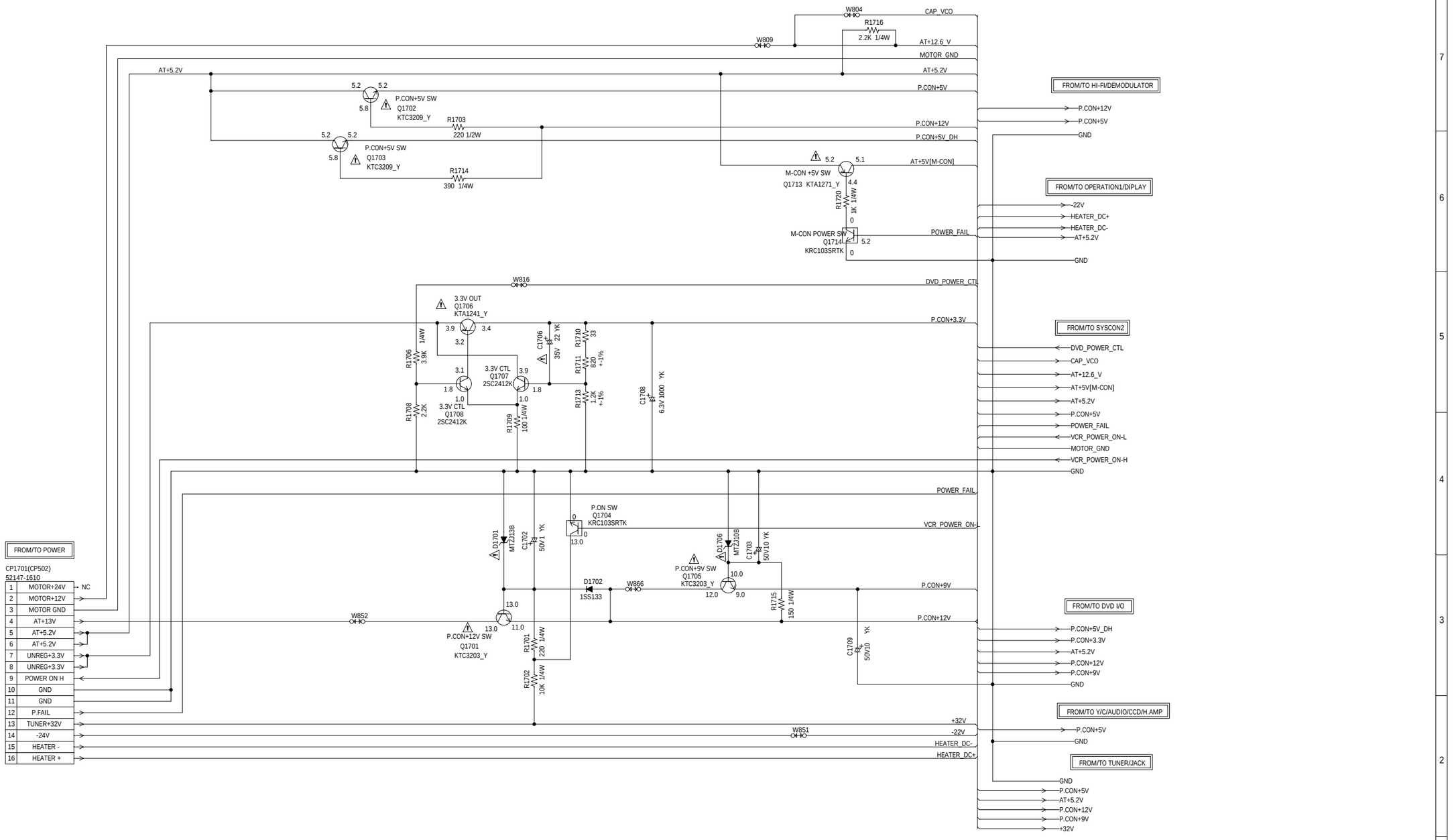
NOTE: THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE 。

CAUTION: SINCE THESE PARTS MARKED BY ⚠ ARE CRITICAL FOR SAFETY, USE ONES DESCRIBED IN PARTS LIST ONLY 。

ATTENTION: LES PIECES REPAREES PAR UN ⚠ ETANT DANGEREUSES AN POINT DE VUE SECURITE N'UTILISER QUE CELLS DECRITES DANS LA NOMENCLATURE DES PIECES。

REGULATOR SCHEMATIC DIAGRAM

(VCR PCB)



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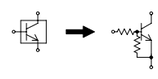
CAUTION: SINCE THESE PARTS MARKED BY ⚠ ARE CRITICAL FOR SAFETY,USE ONES DESCRIBED IN PARTS LIST ONLY 。

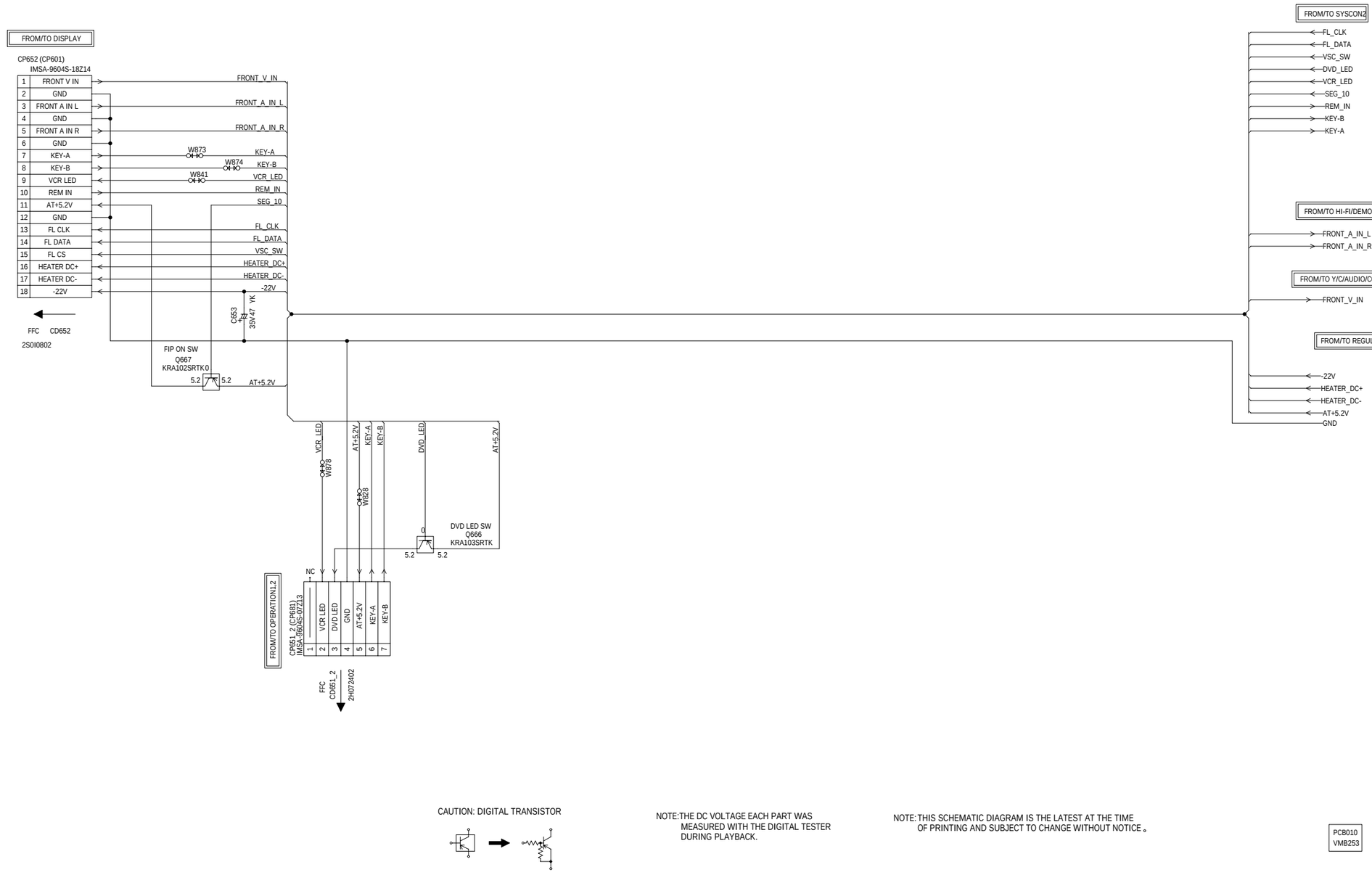
CAUTION: DIGITAL TRANSISTOR



PCB010
VMB253

OPERATION/DISPLAY SCHEMATIC DIAGRAM

(VCR PCB)



CAUTION: DIGITAL TRANSISTOR

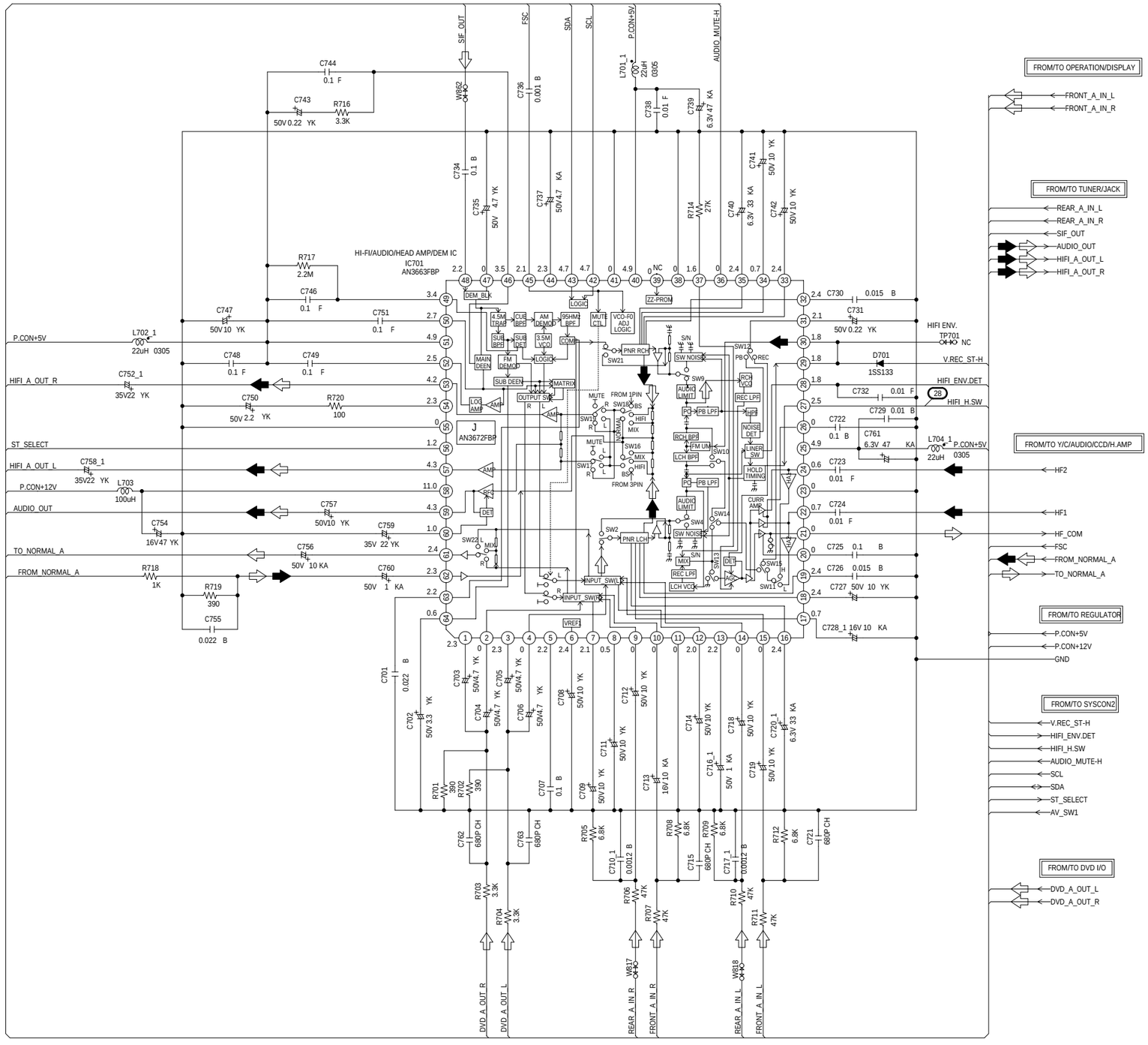
NOTE: THE DC VOLTAGE EACH PART WAS MEASURED WITH THE DIGITAL TESTER DURING PLAYBACK.

NOTE: THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE。

PCB010
VMB253

HI-FI/DEMODULATOR SCHEMATIC DIAGRAM

(VCR PCB)



NOTE:THE DC VOLTAGE EACH PART WAS MEASURED WITH THE DIGITAL TESTER DURING PLAYBACK.

NOTE: THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE 。

AUDIO SIGNAL(REC)
AUDIO SIGNAL(PB)

PCB010
VMB253

DVD I/O SCHEMATIC DIAGRAM

(VCR PCB)

FROM/TO SYSCON1

CP8001(CD8501)
A2001WV2-13P

1	TX
2	RX
3	GND
4	GND
5	P.CON+9V
6	P.CON+9V
7	P.CON+D5V
8	P.CON+D5V
9	GND
10	P.CON+3.3V
11	P.CON+3.3V
12	GND
13	SPDIF-134

W805 TX
W802 RX
W865 P.CON+9V
P.CON+5V_DH
C8048 6.3V 470 YK
P.CON+3.3V
SPDIF-134

FROM/TO AUDIO/VIDEO

CP8002(CP8502)
IMSA-9604S-18Z13

1	Y(G)
2	GND
3	C(CVBS)
4	GND
5	CVBS
6	GND
7	DVD U(B)
8	GND
9	DVD V(R)
10	GND
11	DVD Y(G)
12	GND
13	AUDIO-L
14	GND
15	AUDIO-R
16	ZERO
17	DVD RESET
18	SYS MUTE → NC

Y_OUT
C_OUT
DVD_V_OUT
DVD_U
DVD_V
DVD_Y
ZERO
DVD_RESET

FFC
CD8002H0I1801

P.CON+12V
R8022 56 1/4W
C8070 0.0015 B
C8081 100P CH
R8051 12K
R8054 8.2K
R8056 2.7K
C8106 50V 2.2 KA
C8105 36 16V22 KA
R8057 120 1/4W
R8023 10K
R8049 10K
C8090 0.1 F
C8103 16V 470 YK
R8020 10K
C8023 50V2.2 KANP
R8024 100K1/4W
R8027 1K
C8064 820P CH
R8021 10K
C8022 50V2.2 KANP
R8025 100K
R8047 1K
C8104 37 16V22 KA
R8058 120 1/4W
C8077 0.0015 B
C8065 10V 33 KA
R8026 10K
R8048 10K
C8079 100P CH
C8025 820P CH
R8050 12K
R8052 8.2K
R8053 2.7K
C8102 50V 2.2 KA

A_GND 6.1 6.1 6.1 6.1
VCC 6.1 6.1 6.1 12.3
MIXER IC8004 NJM4580M

DVD_A_OUT_L
DVD_A_OUT_R
DVD_MUTE_L
DVD_MUTE_R

MUTE SW Q8015 2SC2412K
MUTE SW. Q8013 KRA101SRTK
R8045 1K
R8082 3.3K
R8069 4.7K
R8033 10K
MUTE SW. Q8012 KRC103SRTK
D8010 1SS133
D8004 1SS133
MUTE DET Q8010 2SC2412K
R8031 1K
ZERO
MUTE SW Q8014 2SC2412K
R8046 1K
C8052 50V4.7 KA
MUTE SW Q8011 KRC104SRTK
R8068 470K
SYS_MUTE

AT+5.2V

FROM/TO TUNER/JACK
Y_OUT
C_OUT
SPDIF-134
DVD_Y
DVD_U
DVD_V
DVD_A_OUT_L
DVD_A_OUT_R
DVD_V_OUT
DVD_MUTE_L
DVD_MUTE_R

FROM/TO SYSCON2
RX
TX
DVD_RESET
SYS_MUTE

FROM/TO REGULATOR
GND
P.CON+3.3V
AT+5.2V
P.CON+5V_DH
P.CON+12V
P.CON+9V

FROM/TO Y/C/AUDIO/CCD/H.AMP
DVD_V_OUT

FROM/TO HI-FI/DEMODULATOR
DVD_A_OUT_L
DVD_A_OUT_R

NOTE: THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE 。

NOTE: THE DC VOLTAGE EACH PART WAS MEASURED WITH THE DIGITAL TESTER DURING PLAYBACK.

CAUTION: DIGITAL TRANSISTOR

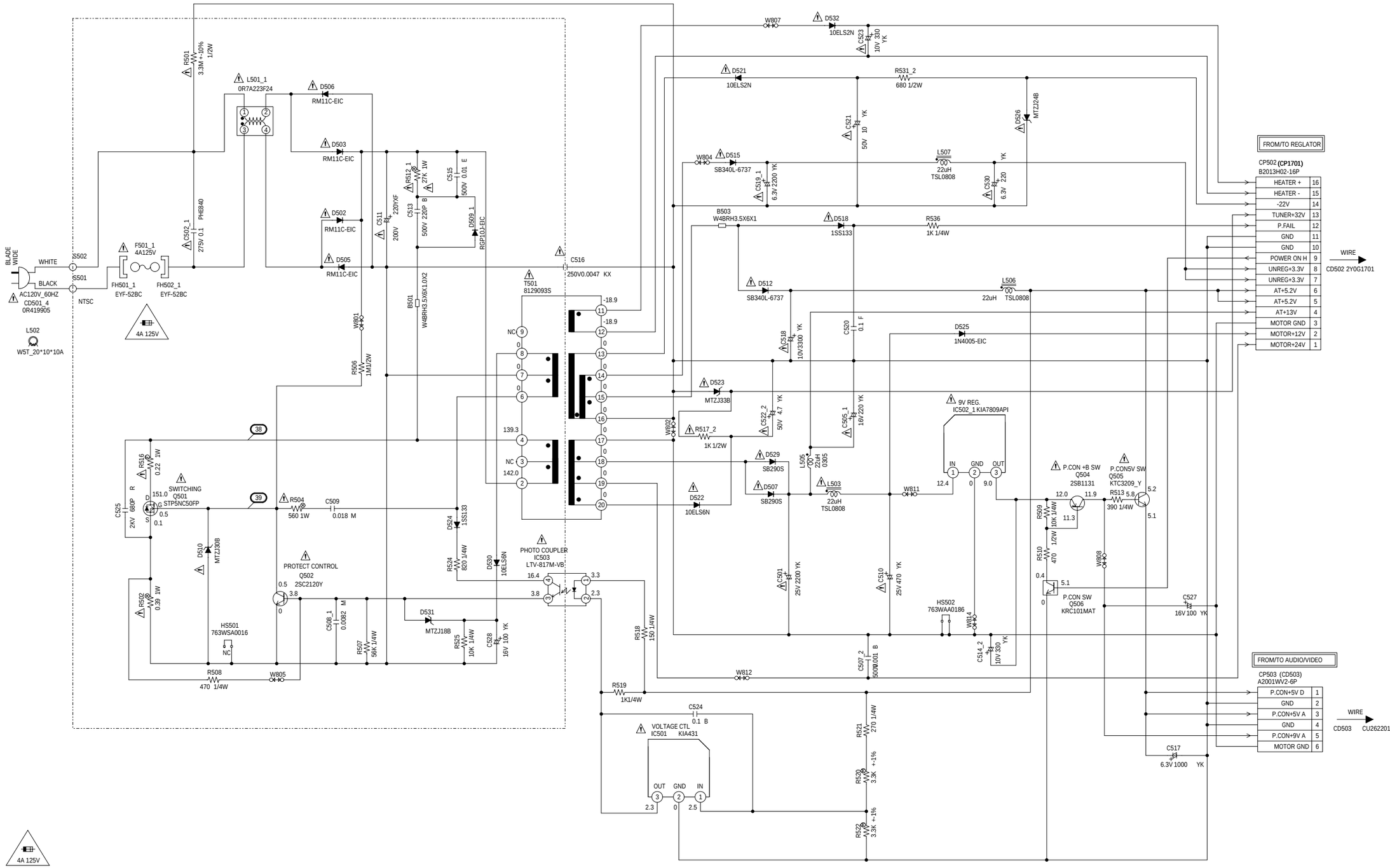
CAUTION: DIGITAL TRANSISTOR

AUDIO SIGNAL(PB)
DIGITAL AUDIO SIGNAL(PB)
PLAYBACK COLOR SIGNAL
PLAYBACK LUMINANCE SIGNAL

PCB010
VMB253

POWER SCHEMATIC DIAGRAM

(POWER PCB)



CAUTION:FOR CONTINUED PROTECTION AGAINST FIRE HAZARD, REPLACE ONLY WITH THE SAME TYPE FUSE 4A 125V(F501).

ATTENTION:POUR UNE PROTECTION CONTINUE LES RISQUES D'INCEIE N'UTOLISER QUE DES FUSIBLE DE MEME TYPE 4A 125V(F501).

CAUTION: SINCE THESE PARTS MARKED BY ⚠ ARE CRITICAL FOR SAFETY,USE ONES DESCRIBED IN PARTS LIST ONLY 。

ATTENTION: LES PIECES REPAREES PAR UN ⚠ ETANT DANGEREUSES AN POINT DE VUE SECURITE N'UTILISER QUE CELLS DECRITES DANS LA NOMENCLATURE DES PIECES。

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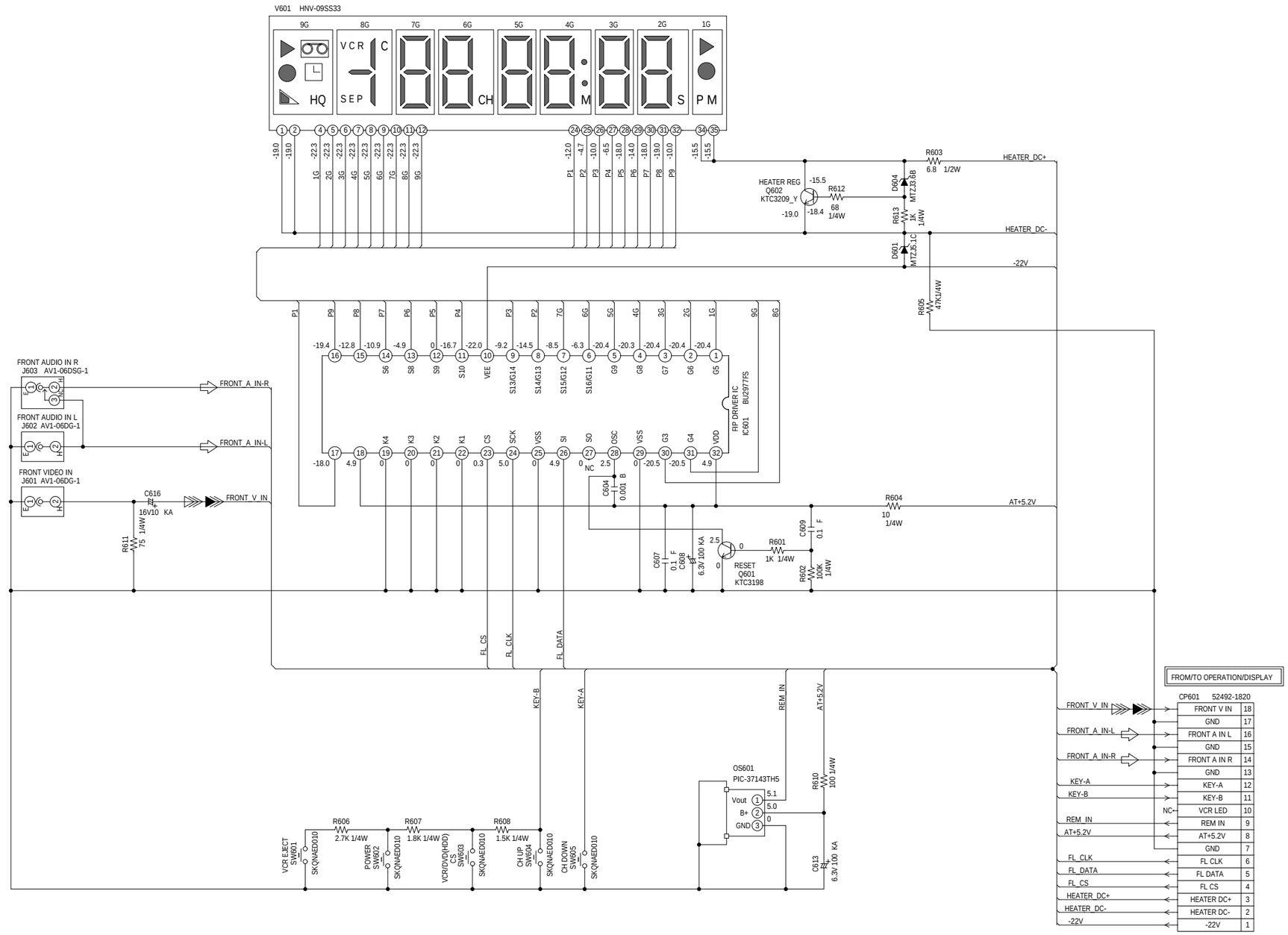
CAUTION: DIGITAL TRANSISTOR

PCB240
VPA152

DISPLAY SCHEMATIC DIAGRAM

(DISPLAY PCB)



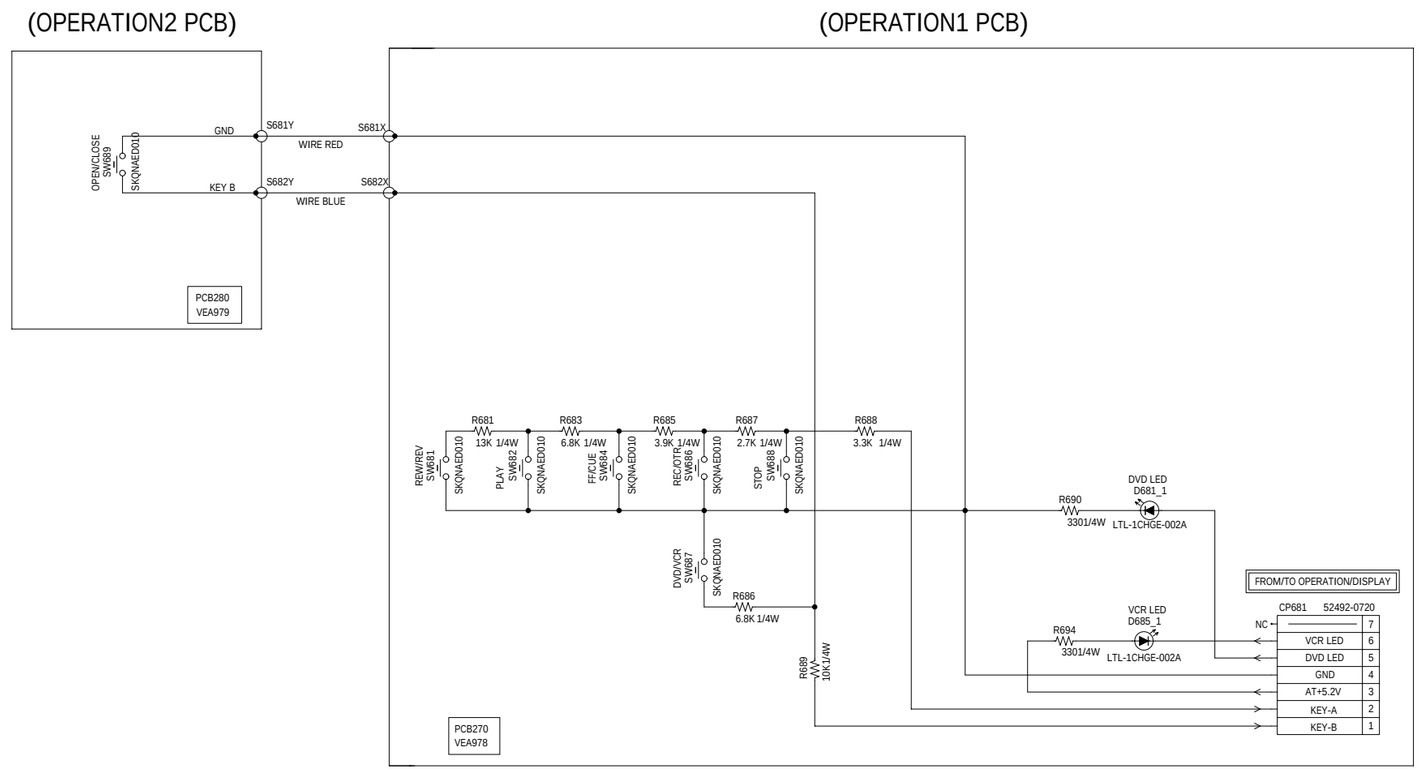
NOTE: THE DC VOLTAGE EACH PART WAS MEASURED WITH THE DIGITAL TESTER DURING PLAYBACK.

NOTE: THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE。

RECORD COLOR SIGNAL
RECORD LUMINANCE SIGNAL
AUDIO SIGNAL(REC)

PCB390
VEA972

OPERATION1/OPERATION2 SCHEMATIC DIAGRAM



NOTE:THE DC VOLTAGE EACH PART WAS MEASURED WITH THE DIGITAL TESTER DURING PLAYBACK.

NOTE: THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE 。

INTERCONNECTION DIAGRAM

DVD DRIVE KDR717SK

OPTICAL PICK-UP

LOADING MOTOR (LM)

SPINDLE MOTOR

SLED MOTOR

CD2601 / CP2601

F-		24	F-
F+		23	F+
T+		22	T+
T-		21	T-
(NC)		20	(NC)
B	→	19	B
A	→	18	A
E	→	17	E
GND-PD	→	16	GND-PD
VC	←	15	VC
VCC	←	14	VCC
F	→	13	F
D	→	12	D
C	→	11	C
CD/DVD	←	10	CD/DVD
(NC)		9	(NC)
(LD-CD)		8	(LD-CD)
VR-CD	→	7	VR-CD
VR-DVD	→	6	VR-DVD
MD	←	5	MD
LD-CD	→	4	LD-CD
HFM	→	3	HFM
LD-DVD	→	2	LD-DVD
GND-LD	→	1	GND-LD

CD2301 (FFC) / CP2301

SLD1	1	→	1	SLD1
SLD2	2	→	2	SLD2
SP1+	3	→	3	SP1+
SP1-	4	→	4	SP1-
+5V	5	→	5	+5V
SP FG	6	←	6	SP FG
GND	7	→	7	GND
LIMIT SW	8	→	8	LIMIT SW

CD2302 (FFC) / CP2302

MLD1(-)	1	→	1	MLD1(-)
MLD2(+)	2	→	2	MLD2(+)
CLOSE	3	→	3	CLOSE
GND(D)	4	→	4	GND(D)
OPEN	5	→	5	OPEN

DVD PCB PCB130 VMB261

CD8501 / CP8001

TX	1	→	1	TX
RX	2	←	2	RX
GND	3		3	GND
GND	4		4	GND
P.CON+9V	5	←	5	P.CON+9V
P.CON+9V	6	←	6	P.CON+9V
P.CON+D5V	7	←	7	P.CON+D5V
P.CON+D5V	8	←	8	P.CON+D5V
GND	9		9	GND
P.CON+3.3V	10	←	10	P.CON+3.3V
P.CON+3.3V	11	←	11	P.CON+3.3V
GND	12		12	GND
SPDIF-134	13	→	13	SPDIF-134

CD8002 (FFC) / CP8002 / CP8502

CP8502				CP8002
Y(G)	18	18 → 1	1	Y(G)
GND	17	17 → 2	2	GND
C(CVBS)	16	16 → 3	3	C(CVBS)
GND	15	15 → 4	4	GND
CVBS	14	14 → 5	5	CVBS
GND	13	13 → 6	6	GND
DVD U(B)	12	12 → 7	7	DVD U(B)
GND	11	11 → 8	8	GND
DVD V(R)	10	10 → 9	9	DVD V(R)
GND	9	9 → 10	10	GND
DVD Y(G)	8	8 → 11	11	DVD Y(G)
GND	7	7 → 12	12	GND
AUDIO-L	6	6 → 13	13	AUDIO-L
GND	5	5 → 14	14	GND
AUDIO-R	4	4 → 15	15	AUDIO-R
ZERO	3	3 → 16	16	ZERO
DVD RESET	2	2 ← 17	17	DVD RESET
SYS MUTE	1	1 ← 18	18	SYS MUTE

CD8502 / CP503

	1	2	3	4	5	6
CD8502	P.CON+5V D	GND	P.CON+5V A	GND	P.CON+9V A	MOTOR GND
CP503	P.CON+5V D	GND	P.CON+5V A	GND	P.CON+9V A	MOTOR GND

CD502 WIRE / CP502 / CP1701

CP502				CP1701
MOTOR+24V	1	→	1	MOTOR+24V
MOTOR+12V	2	→	2	MOTOR+12V
MOTOR GND	3	→	3	MOTOR GND
AT+13V	4	→	4	AT+13V
AT+5.2V	5	→	5	AT+5.2V
AT+5.2V	6	→	6	AT+5.2V
UNREG+3.3V	7	→	7	UNREG+3.3V
UNREG+3.3V	8	→	8	UNREG+3.3V
POWER ON H	9	→	9	POWER ON H
GND	10	→	10	GND
GND	11	→	11	GND
P.FAIL	12	→	12	P.FAIL
TUNER+32V	13	→	13	TUNER+32V
-24V	14	→	14	-24V
HEATER -	15	→	15	HEATER -
HEATER +	16	→	16	HEATER +

BLADE WIDE: WHITE S502, BLACK S501

CD501_4 AC120V_60HZ

POWER PCB PCB240 VPB152

OPE.2 PCB PCB280 VEA979 — S681Y, S682Y, S681X, S682X — OPE.1 PCB PCB270 VEA978

CP681 / CD651 FFC

	7	6	5	4	3	2	1
CP681		VCR LED	DVD LED	GND	AT+5.2V	KEY-A	KEY-B
CD651 FFC	NC	NC					
CP651		VCR LED	DVD LED	GND	AT+5.2V	KEY-A	KEY-B

FRONT AV JACK VIDEO J601

FRONT AV JACK AUDIO IN L J602

FRONT AV JACK AUDIO IN R J603

OS601: Vout, GND, B+

DISPLAY PCB PCB390 VEA972

CP601 / CP652

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
CP601	-22V	HEATER DC-	HEATER DC+	FL CS	FL DATA	FL CLK	GND	AT+5.2V	REM IN	VCR LED	KEY-B	KEY-A	GND	FRONT A IN R	GND	FRONT A IN L	GND	FRONT V IN
CP652	-22V	HEATER DC-	HEATER DC+	FL CS	FL DATA	FL CLK	GND	AT+5.2V	REM IN	VCR LED	KEY-B	KEY-A	GND	FRONT A IN R	GND	FRONT A IN L	GND	FRONT V IN

COMMAND TRANSMITTER TM601

FULL ERASE HEAD ASS'Y H5002 — CP103: FE HEAD (HOT), FE HEAD (GND)

HALL SENSOR, MAIN COIL, ROTOR MAGNET, MR FG SENSOR (VCC, O, G)

HALL VCC, HALL IN, OUT SWITCH LOGIC

CP3001

CAP FG	1		1
CAP VCO	2		2
VCC	3		3
CAP.M/F/R	4		4
I LIMIT	5		5
MOTOR GND	6		6
GND	7		7
LD/CY VCO	8		8
CAP CTL	9		9
LDM CTL	10		10
CYL FG/PG	11		11
CYL CTL	12		12

CAPSTAN DD UNIT M2001

FFC 1–7: RED, WHITE

LOADING MOTOR M101

UN4001 CYLINDER UNIT: D-PG GND, D-PG OUT, M-GND, D-COM, D-W OUT, D-V OUT, D-U OUT

TUNER,DEMODULATOR AND RF CONVERTER TU301

V.OUT	24		V.OUT
AFT	23		AFT
SIF OUT	22		SIF OUT
A.OUT	21		A.OUT
IF OUT	18		
IF TP	17		
TU 32V	16		TU 32V
NC	15		(FSC)
PB 5V	14		PB 5V
BM	13		BM
DATA	12		DATA
CLOCK	11		CLOCK
CE	10		CE
NC	9		(BT)
NC	8		(RF AGC)
V.IN	6		V.IN
CONTROL	5		CONTROL
MB	4		MB
CH	3		CH
A.IN	2		A.IN

RF SW SW301: CH3, CH4; RF OUT, RF IN

CP101 / FPC

HF1 (R)	9	9	HI-FI HEAD
HF COM	8	8	
HF2 (L)	7	7	
SP-CH1 (R)	6	6	SP HEAD
SP COM	5	5	
SP-CH2 (L)	4	4	
EP/LP-CH1 (R)	3	3	EP/LP HEAD
EP/LP COM	2	2	
EP/LP-CH2 (L)	1	1	

CP102

AUDIO PB	6	6	AUDIO PB
AUDIO REC	5	5	AUDIO REC
CTL+	4	4	CTL+
CTL-	3	3	CTL-
AE HEAD(-)	2	2	AE HEAD(-)
AE HEAD(+)	1	1	AE HEAD(+)

CD102 FFC

HEAD AUDIO CONTROL ASS'Y H5001: AUDIO PB, AUDIO REC, CTL+, CTL-, AE HEAD(-), AE HEAD(+) — AUDIO, CONTROL, AE

VCR PCB PCB010 VMB253

COMPONENT OUT J8008

OPT TRNSFORMER OS8001: INPUT, VCC, GND

COAXIAL J8007

DVD AUDIO OUT J8009

Y/C SEPA J8006

REAR OUT JACK J8001

REAR IN JACK J8002

CAUTION: SINCE THESE PARTS MARKED BY ⚠ ARE CRITICAL FOR SAFETY,USE ONES DESCRIBED IN PARTS LIST ONLY 。

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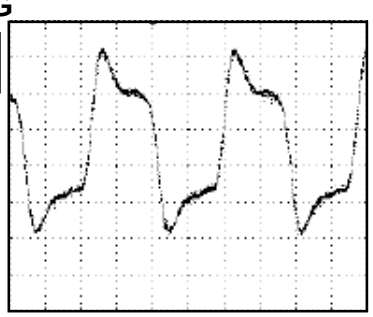
WAVEFORMS

MPEG

10ns
1.0V

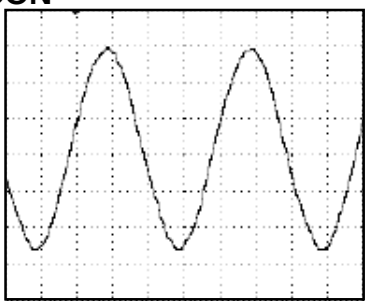
①



SYSCON

20ns
500mV

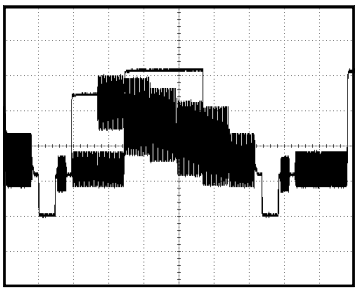
⑥



Y/C/AUDIO/CCD/ HEAD AMP

10µs
500mV

⑯



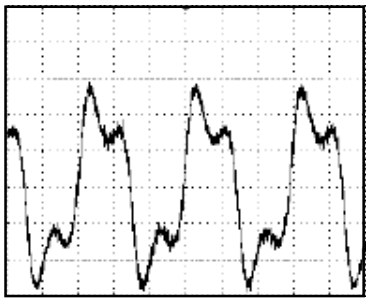
DSP

100ns
1.0V

②

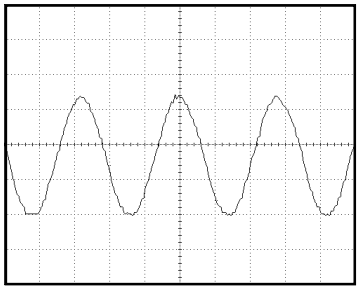
20ns
1.0V

⑦



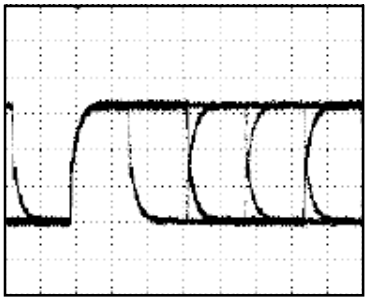
100ns
100mV

⑰



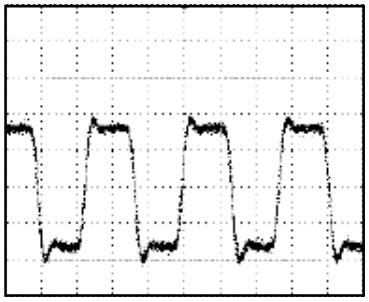
100ns
1.0V

③



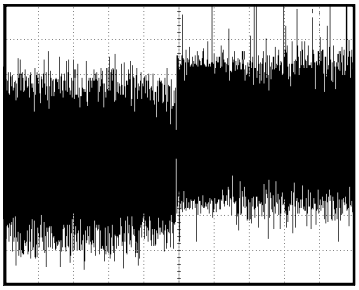
20ns
1.0V

⑧



1ms
100mV

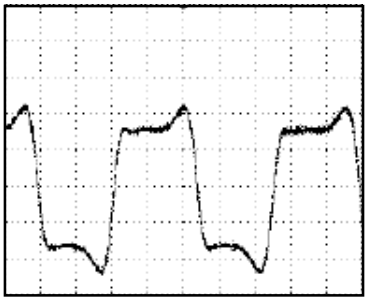
⑱



READ CHANNEL

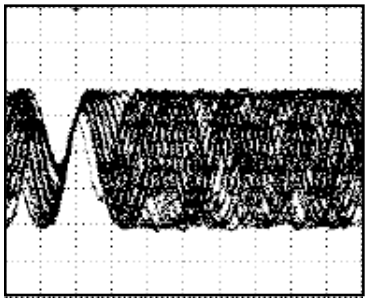
1ms
1.0V

④



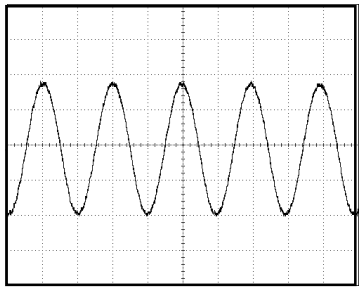
200ns
200mV

⑨



200ms
500mV

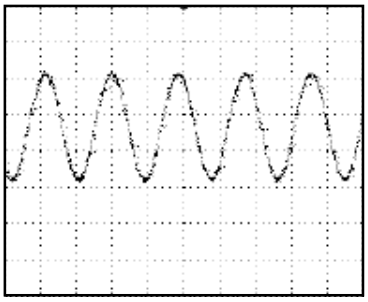
⑲



MEMORY

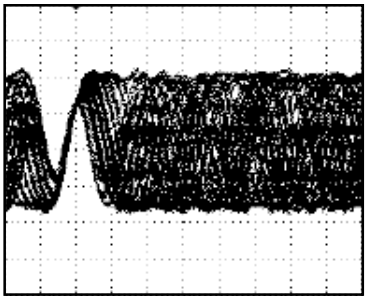
5ns
1.0V

⑤



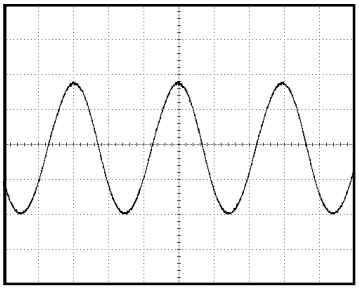
200ns
200mV

⑩



5µs
20V

⑳



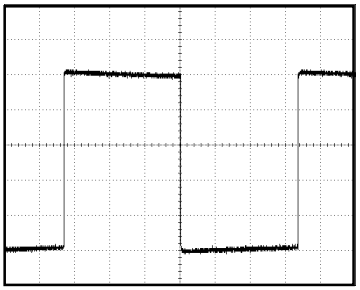
NOTE: The following waveforms were measured at the point of the corresponding balloon number in the schematic diagram.

WAVEFORMS

VCR SYSCON

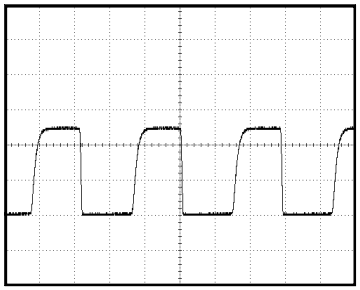
5ms
1.0V

21



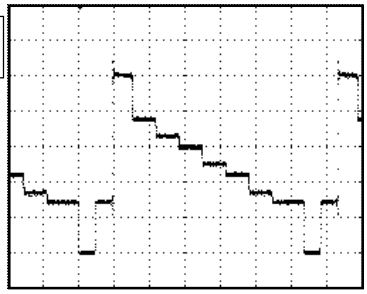
5ms
2.0V

27



10µs
200mV

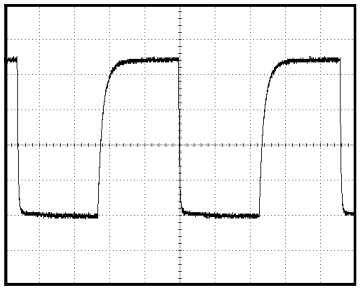
32



HI-FI/DEMODULATOR

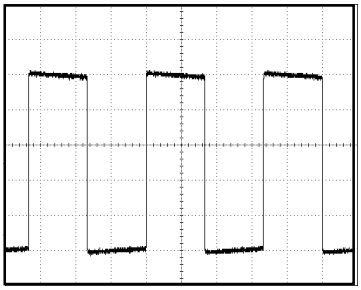
200µs
1.0V

22



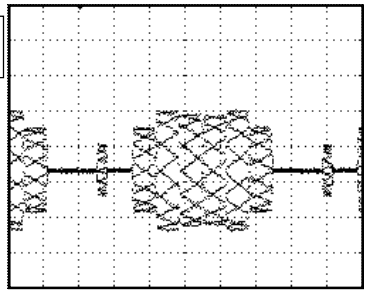
10ms
1.0V

28



10µs
200mV

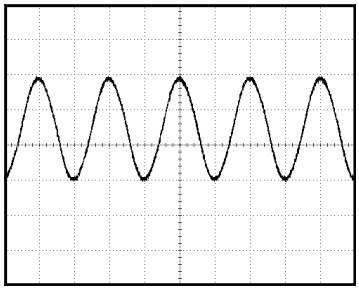
33



TUNER/JACK

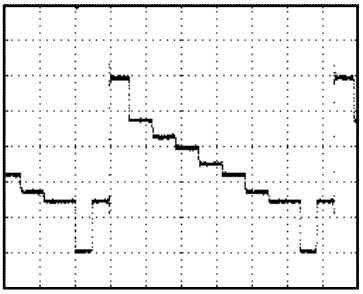
50ns
1.0V

23



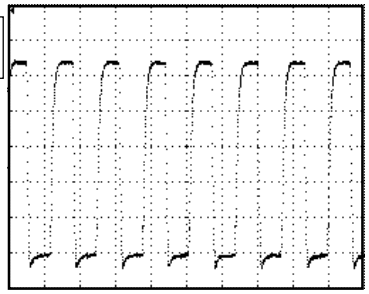
10µs
200mV

29



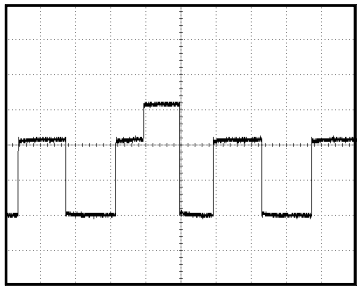
500ns
100mV

34



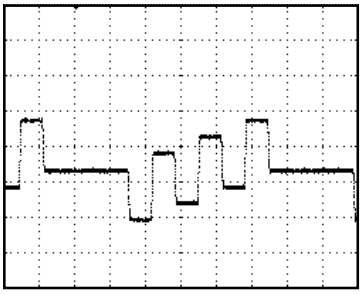
500µs
1.0V

24



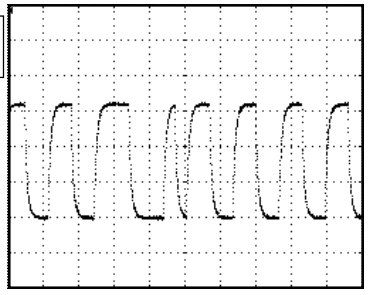
10µs
200mV

30



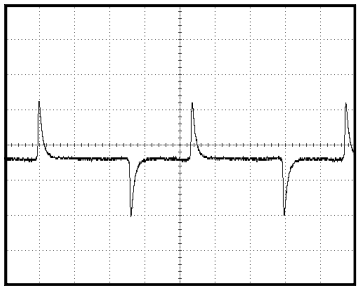
500ns
1.0V

35



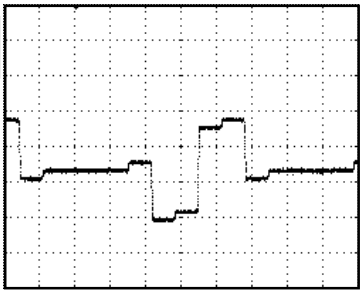
5ms
500mV

25



10µs
200mV

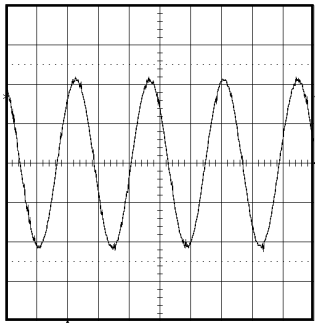
31



DVD I/O

1ms
100mV

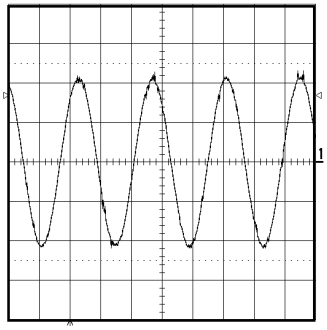
36



NOTE: The following waveforms were measured at the point of the corresponding balloon number in the schematic diagram.

WAVEFORMS

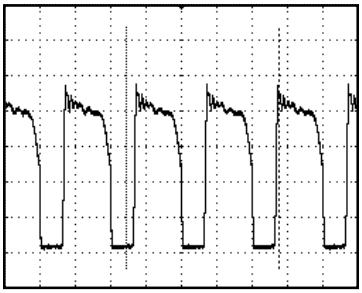
1ms
100mV



37

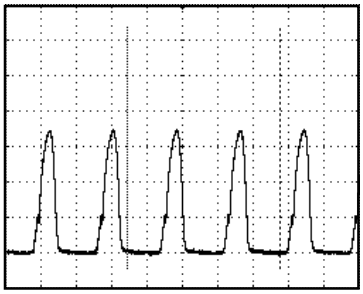
POWER

5µs
500mV



38

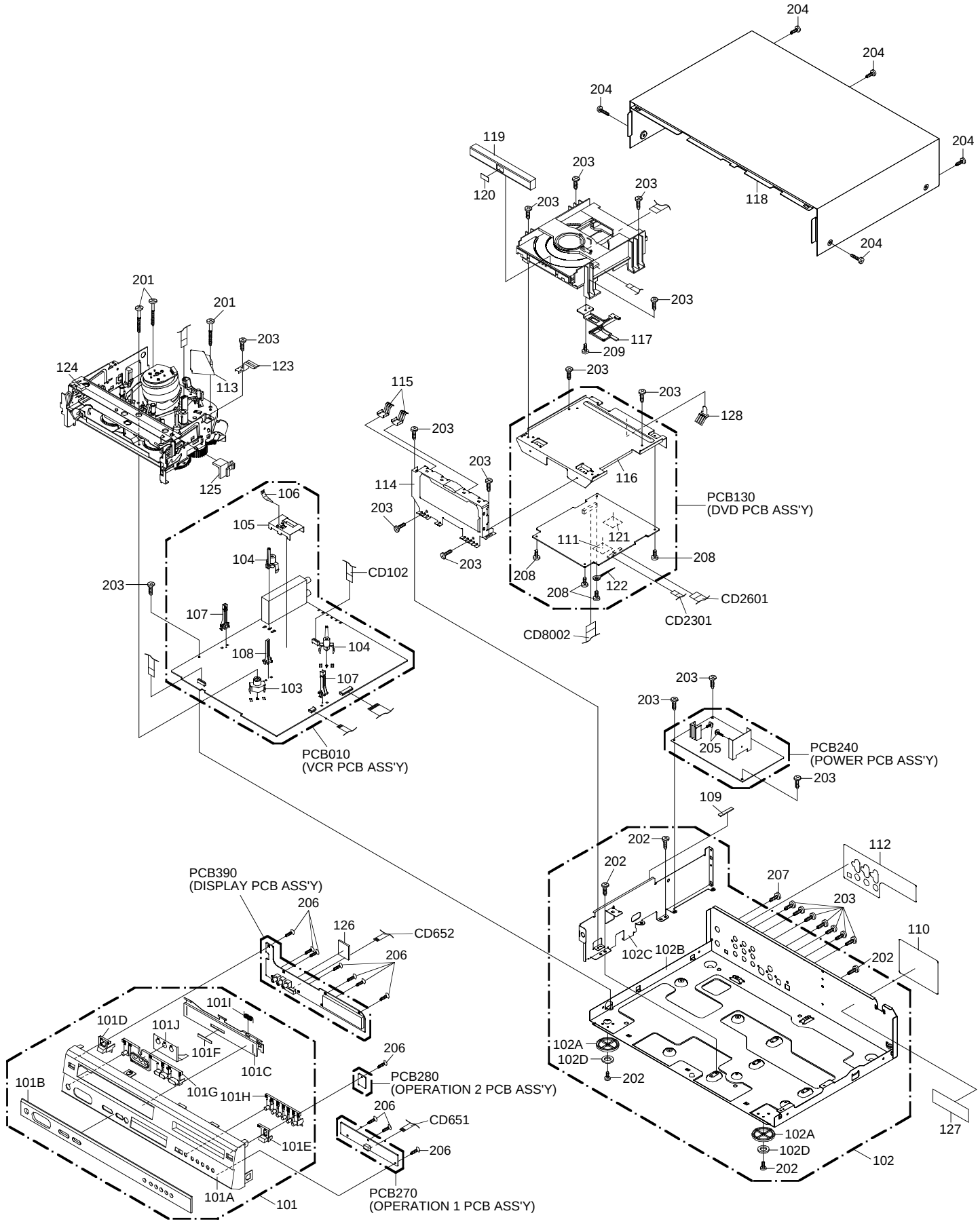
5µs
5.0V



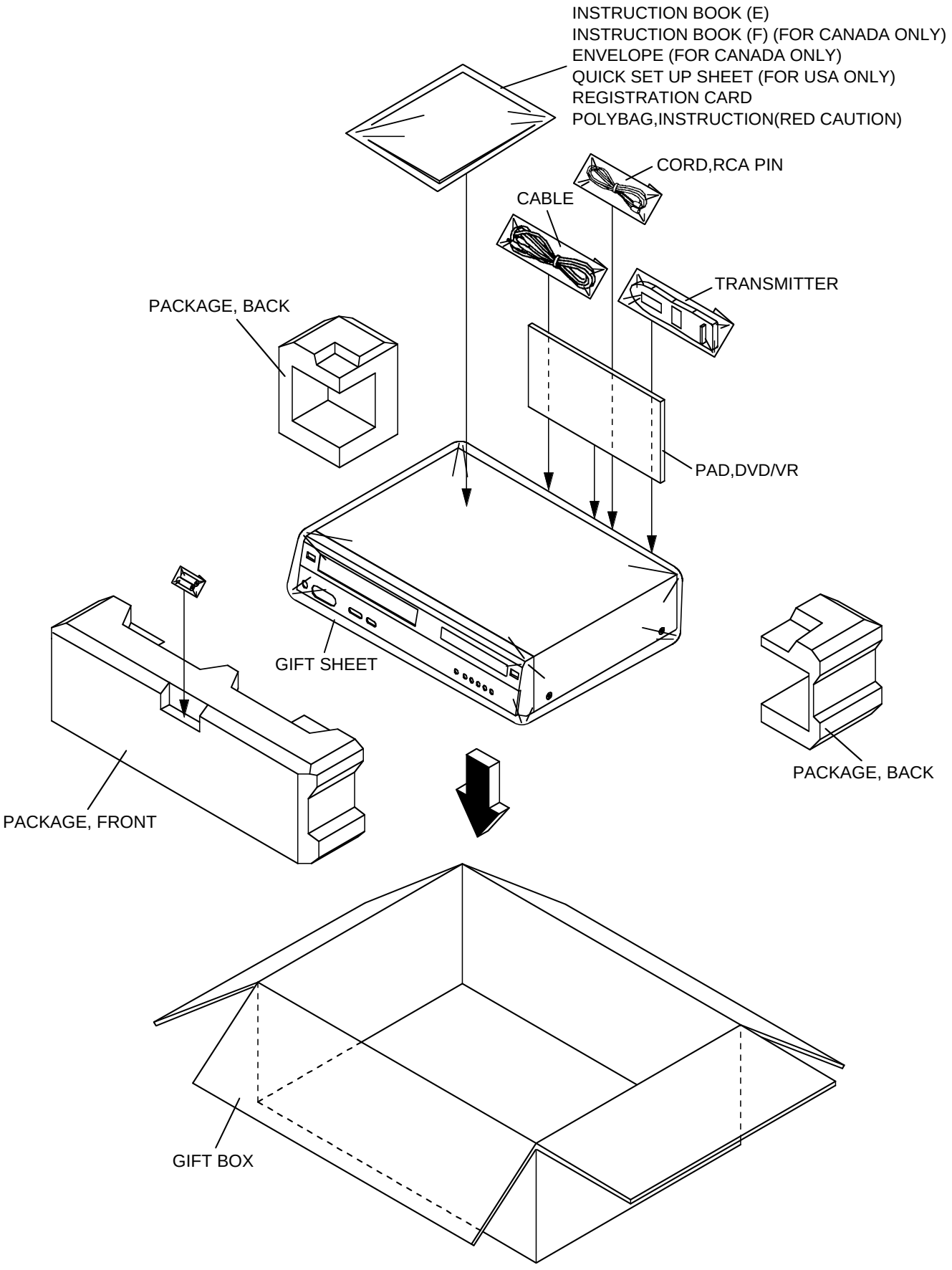
39

NOTE: The following waveforms were measured at the point of the corresponding balloon number in the schematic diagram.

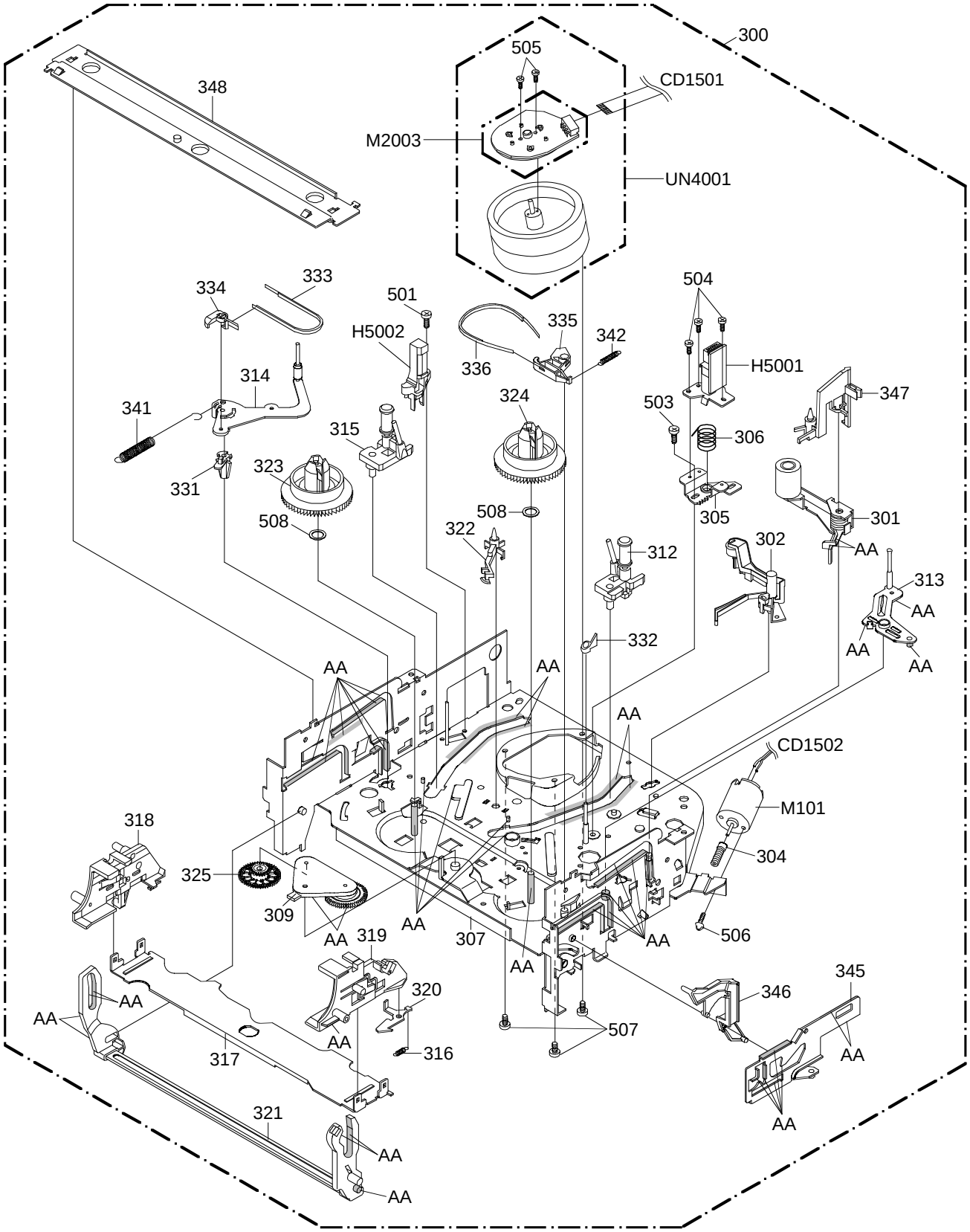
MECHANICAL EXPLODED VIEW



PACKING DIAGRAM



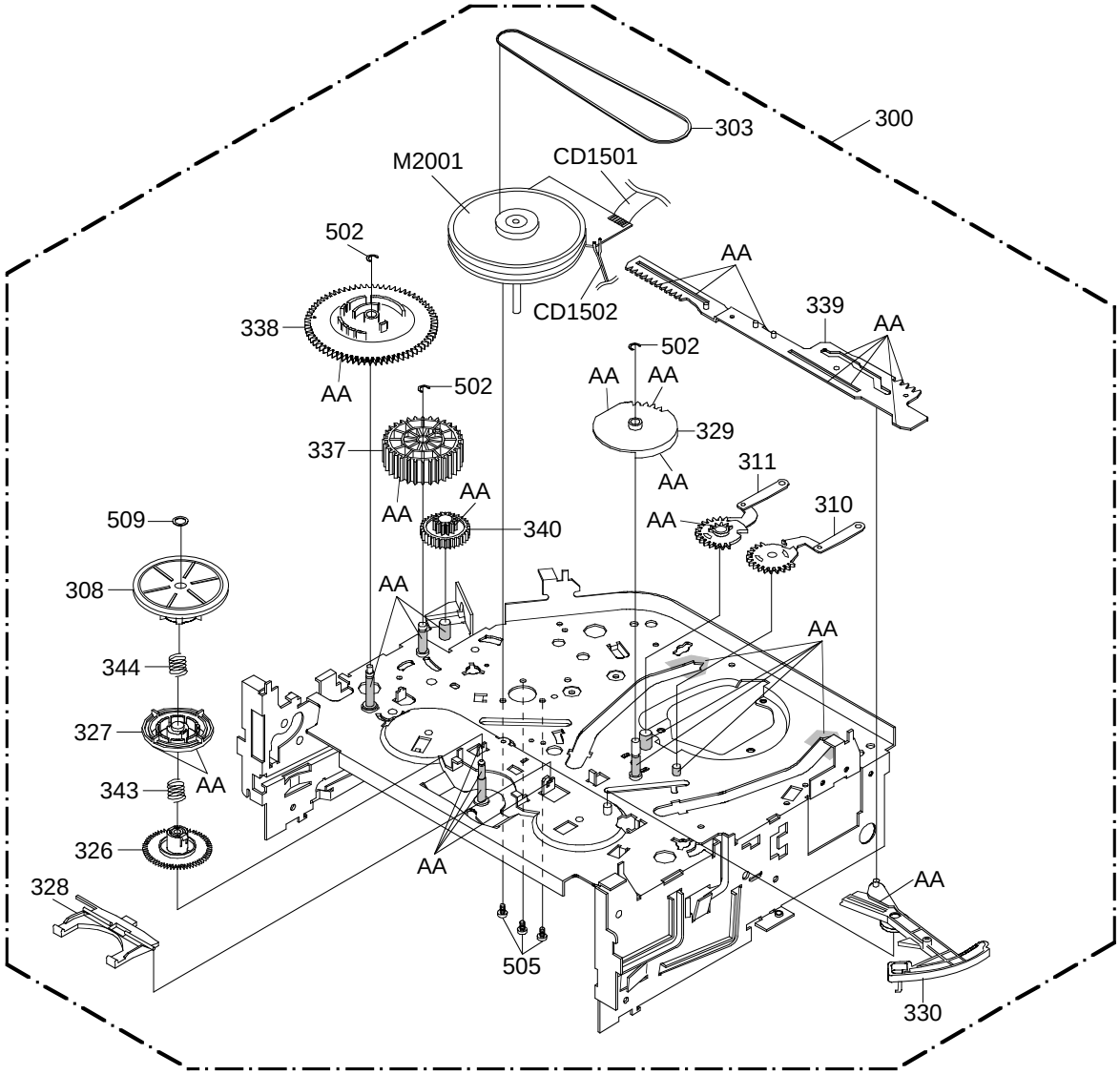
CHASSIS EXPLODED VIEW (TOP VIEW)



CLASS	MARK
GREASE	AA

NOTE: Applying positions AA for the grease are displayed for this section.
Check if the correct grease is applied for each position.

CHASSIS EXPLODED VIEW (BOTTOM VIEW)



CLASS	MARK
GREASE	AA

NOTE: Applying positions AA for the grease are displayed for this section.
Check if the correct grease is applied for each position.

MECHANICAL REPLACEMENT PARTS LIST

Location No.	TSB P/N	Reference No.	Description	
101	79091252	A2B016C720	CABINET,FRONT ASSY	
101A	79091343	701WPJ1108	CABINET,FRONT	
101B	79091344	711JPD0125	PLATE,DISPLAY	
101C	79091345	712WPB0103	FLAP	
101D	79091346	735WPJ0210	BUTTON,VCR EJECT	
101E	79091347	735WPJ0211	BUTTON,DVD EJECT	
101F	79099167	7235490018	BADGE,BRAND	
101G	79091348	735WPB0193	BUTTON,FRAME(L)	
101H	79091349	735WPJ0209	BUTTON,FRAME(R)	
101I	72001381	743WKA0032	SPRING,FLAP	
101J	79091025	752WSA0285	SHIELD,3PIN	
102	79091352	A2B016C730	CABINET,BOTTOM ASSY	
102A	79099168	704WPC0001	LEG,BOTTOM	
102B	79091012	702WSA0119	PLATE,BOTTOM	
102C	72001387	761WSA0082	ANGLE,CENTER	
102D	79097713	800WR0A023	CUSHION	23x13xT3
103	79099161	701WPA0686	HOLDER,DECK	
104	79099162	701WPA0751	HOLDER,DECK	
105	79099163	752WSA0230	SHIELD,CASE HEAD AMP	
106	79099164	753WUAA006	SPRING,EARTH HEAD AMP	
107	79091294	85OP700038	HOLDER,END SENSOR	
108	79099166	85OP700037	HOLDER,LED	
109	79091033	800WFA0055	CUSHION	20x5xT1
110	79091350	7225490096	SHEET,RATING (FOR USA)	
	79091351	7225490097	SHEET,RATING (FOR CANADA)	
111	79091016	7230007426	SHEET,IC	
112	79091213	7230007448	SHEET,JACK	
113	79099169	752WSA0275	COVER,AC HEAD	
114	79091026	753WSA0153	SHIELD,FRONT	
115	79097709	753WUA0060	SPRING,EARTH	
116	79091027	761WSA0096	ANGLE,DECK	
117	BZ710697	761WPA0250	HOLDER,FFC	
118	79099170	702WSB0066	CABINET,TOP	
119	79071208	712WPB0100	PLATE,TRAY FRONT	
120	79099172	7235630003	SHEET,DVD	
121	79091020	7230007461	SHEET,IC	
122	72640027	8995034000	CORD CLIP UL CO.	
123	79097710	753WUA0062	SPRING,EARTH-TOP	
124	79097712	800WFAA013	CUSHION,LEG	
125	AD301691	701WPA0781	HOLDER,TOP	
126	79091032	800WF00053	CUSHION,FFC	
127	79091215	7260000332	SHEET,CAUTION	
128	AD301574	744WUA0013	SPRING,EARTH	
201	72001394	8109130B94	SCREW,TAP TITE(B) R PAN	3x29
202	72001395	8109230704	SCREW,TAP TITE(B) R BIND	3x7
203	72001396	8109230804	SCREW,TAP TITE(B) BIND	3x8
204	72001397	8109K30601	SCREW,TAP TITE(B) BIND(3D)	3x6
205	BZ710239	8109I30A04	SCREW,TAP TITE(B) WH7	3x10
206	72001398	8110326804	SCREW TAP TITE(P) FLAT	2.6x8
207	72001393	8107230404	SCREW,TAP TITE(S) BIND	3x4
208	BZ710562	8109I30804	SCREW,TAP TITE(B) WH7	3x8
209	BZ710187	8110226804	SCREW,TAP TITE(P) BIND	2.6x8
---	72001483	791WHA0100	GIFT SHEET	
---	79091028	792WHA0355	PACKAGE,FRONT	
---	79091029	792WHA0358	PACKAGE,BACK	
---	79091353	793WCD1395	GIFT BOX (FOR USA)	
	79091354	793WCD1412	GIFT BOX (FOR CANADA)	
---	79091031	795WCA0662	PAD,DVD/VR	155x250
---	79091355	A2B016C975	INSTRUCTION BOOK KIT (FOR USA)	
	79091356	A2B018C975	INSTRUCTION BOOK KIT (FOR CANADA)	
---	79091361	J2B01801A	INSTRUCTION BOOK (E)	
---	79091362	J2B01810A	INSTRUCTION BOOK (F) (FOR CANADA ONLY)	
---	AD301582	J2A70617	REGISTRATION CARD (FOR USA)	
	79091357	J2A70917	REGISTRATION CARD (FOR CANADA)	
---	79091358	J2B01607A	QUICK SET-UP SHEET (FOR USA ONLY)	
---	AD300502	J3I70725	ENVELOPE (FOR CANADA ONLY)	
---	79091359	JB5UD300	POLYBAG,INSTRUCTION(RED CAUTION)(FOR USA)	

CHASSIS REPLACEMENT PARTS LIST

Location No.	TSB P/N	Reference No.	Description		
300	79091360	A2A726D420K	DECK ASSY	A2A726D420K	
301	79099178	85OA400234	PINCH ROLLER BLOCK		
302	79099179	85OA500026	AHC ASS'Y		
303	79099180	85OP200290	BELT,CAPSTAN (S)		
304	79099181	85OP600581	WORM		
305	79099182	85OP500083	BASE,AC HEAD		
306	79099183	85OP800324	SPRING,AC HEAD		
307	79099184	85OA000459	MAIN CHASSIS ASS'Y		
308	79099185	85OA200089	CLUTCH ASS'Y		
309	79099186	85OA200090	ARM IDLER ASS'Y		
310	79099187	85OA300065	LOADING ARM S UNIT		
311	79099188	85OA300066	LOADING ARM T UNIT		
312	79099189	85OA400223	INCLINED BASE T UINT 3S		
313	79099190	85OA400232	P5 ARM ASS'Y 2		
314	79099191	85OA400235	TENSION ARM ASS'Y 2		
315	79099192	85OA400231	INCLINED BASE S UNIT		
316	79099193	85OP800358	SPRING,LOCKER		
317	79099194	85OP900736	CASS,HOLDER		
318	79099195	85OP900748	CASS,SIDE L		
319	79099196	85OP900749	CASS,SIDE R		
320	79099197	85OP900739	LOCKER,R		
321	79099198	85OA900228	LINK UNIT		
322	79099199	85OP000496	POST,CASS GUIDE		
323	79099200	85OP200316	REEL,S (S)		
324	79099201	85OP200317	REEL,T (S)		
325	79099202	85OP200308	GEAR,IDLER		
326	79099203	85OP200311	GEAR,CLUTCH		
327	79099204	85OP200312	GEAR,COUPLING		
328	79099205	85OP200313	LEVER,CLUTCH		
329	79099206	85OP300194	GEAR,MAIN LOADING		
330	79099207	85OP400490	LEVER,TENSION		
331	79099208	85OP400492	HOLDER,TENSION		
332	79099209	85OP400520	CAP.P4		
333	79097714	85OP400542	BAND,TENSION		
334	79099211	85OP400533	CONNECT,TENSION		
335	79099212	85OP600573	ARM,BRAKE T		
336	79097715	85OP600584	BAND,BRAKE T		
337	79099214	85OP600577	CAM,PINCH ROLLER		
338	79099215	85OP600578	CAM,MAIN		
339	79099216	85OP600579	ROD,MAIN		
340	79099217	85OP600582	GEAR,JOINT		
341	79099218	85OP800322	SPRING,TENSION		
342	79099219	85OP800360	SPRING,BRAKE T		
343	79099220	85OP800355	SPRING,COUPLING		
344	79099221	85OP800356	SPRING,RING		
345	79099222	85OP900750	LEVER,LINK 2		
346	79099223	85OP900744	LEVER,FLAP		
347	79099224	85OP900745	CASS,OPENER		
348	79099225	85OP900746	BRACKET,TOP 3V		
501	79099226	8107226804	SCREW,TAP TITE(S) BIND	2.6x8	
502	79099235	83ETW30000	E-RING	3.0	
503	79099228	8107226404	SCREW,TAP TITE(S) BIND	2.6x4	
504	79099229	8102120604	SCREW,PAN	M2x6	
505	79099230	8109126604	SCREW,TAP TITE(B) PAN	2.6x6	
506	79099231	810A130404	SCREW/WASHER(A)	M3x4	
507	79099232	810A126504	SCREW/WASHER(A)	M2.6x5	
508	79099233	82Q264713N	POLYSLIDER WASHER	2.6x4.7xT0.13	
509	79099234	82P184505N	POLYSLIDER WASHER(CUT)	1.8x4.5xT0.5	
CD1501	79099236	122H071603	CORD JUMPER	SMCD-7X151	
CD1502	79099237	122Y021902	CORD JUMPER	2Y021902	
H5001	79099238	1523D91034	HEAD (AUDIO CONTROL)	HVMXA1072A	
H5002	79099239	1543D02013	HEAD (FULL ERASE)	HVFHP0032A	
⚠ M101	79099240	1596P98001	MOTOR (LOADING)	MXN13FB12K3	
	79097706	1596S98001	MOTOR (LOADING)	MDB2B66	or
⚠ M2001	79099241	1510S98036	CAPSTAN DD UNIT	F2QVB08	
M2003	79099242	1589S11017	MICRO MOTOR	I2OAL05	
	72001412	1589S11015	MICRO MOTOR	I2OAL01	or
⚠ UN4001	AD301696	A2A501A500	CYLINDER UNIT ASS'Y	A2A501A500	

ELECTRICAL REPLACEMENT PARTS LIST

Location No.	TSB P/N	Reference No.	Description	
		RESISTORS		
R101	79091326	R801R7561J	RC	560 OHM 1/10W
R102	79091168	R903N8103J	RC	10K OHM 1/8W
R103	79091168	R903N8103J	RC	10K OHM 1/8W
R104	79091127	R002T46R8J	RC	6.8 OHM 1/4W
R105	AD300780	R903N8102J	RC	1K OHM 1/8W
R106	79091197	R903N8681J	RC	680 OHM 1/8W
R107	79091185	R903N8332J	RC	3.3K OHM 1/8W
R108	79091319	R801R7223J	RC	22K OHM 1/10W
R110	79091202	R903N8822J	RC	8.2K OHM 1/8W
R111	79091202	R903N8822J	RC	8.2K OHM 1/8W
R112	79091187	R903N8334J	RC	330K OHM 1/8W
R113	AD301598	R903N8221J	RC	220 OHM 1/8W
R114	79091177	R903N8183J	RC	18K OHM 1/8W
R115	79091201	R903N8821J	RC	820 OHM 1/8W
R116	79091182	R903N8273J	RC	27K OHM 1/8W
R117	AD300655	R903N8222J	RC	2.2K OHM 1/8W
R119	AD300655	R903N8222J	RC	2.2K OHM 1/8W
R120	AD301598	R903N8221J	RC	220 OHM 1/8W
R121	BZ210119	R002T4102J	RC	1K OHM 1/4W
R122	79091169	R903N8104J	RC	100K OHM 1/8W
R123	BZ210126	R002T4222J	RC	2.2K OHM 1/4W
R124	79091203	R903N8823J	RC	82K OHM 1/8W
R127	79091199	R903N8684J	RC	680K OHM 1/8W
R129	BZ210121	R002T4182J	RC	1.8K OHM 1/4W
R131	79091173	R903N8152J	RC	1.5K OHM 1/8W
R132	79091185	R903N8332J	RC	3.3K OHM 1/8W
R133	79091202	R903N8822J	RC	8.2K OHM 1/8W
R136	79091178	R903N8223J	RC	22K OHM 1/8W
R137	79091114	R002T4123J	RC	12K OHM 1/4W
R138	79091178	R903N8223J	RC	22K OHM 1/8W
R139	79091315	R801R7123J	RC	12K OHM 1/10W
R142	79091201	R903N8821J	RC	820 OHM 1/8W
R301	79091319	R801R7223J	RC	22K OHM 1/10W
R302	AD301003	R801R7102J	RC	1K OHM 1/10W
R304	BZ210182	R002T4103J	RC	10K OHM 1/4W
R305	AD301003	R801R7102J	RC	1K OHM 1/10W
⚠ R501	79099001	R0G3K2335K	RC	3.3M OHM 1/2W
⚠ R502	79099002	R3X181R39J	R,METAL OXIDE	0.39 OHM 1W
⚠ R504	AD301141	R3X181561J	R,METAL OXIDE	560 OHM 1W
R506	79091107	R002T2105J	RC	1M OHM 1/2W
R507	79091125	R002T4563J	RC	56K OHM 1/4W
R508	79091123	R002T4471J	RC	470 OHM 1/4W
R509	BZ210182	R002T4103J	RC	10K OHM 1/4W
R510	79091110	R002T2471J	RC	470 OHM 1/2W
⚠ R512	79099004	R3X181273J	R,METAL OXIDE	27K OHM 1W
R513	79091120	R002T4391J	RC	390 OHM 1/4W
⚠ R516	79099005	R63581R22J	R,FUSE	0.22 OHM 1W
R517	BZ210180	R002T2102J	RC	1K OHM 1/2W
R518	79091116	R002T4151J	RC	150 OHM 1/4W
R519	BZ210119	R002T4102J	RC	1K OHM 1/4W
R520	72001305	R4X5T6332F	R,METAL	3.3K OHM 1/6W
R521	79091117	R002T4271J	RC	270 OHM 1/4W
R522	72001305	R4X5T6332F	R,METAL	3.3K OHM 1/6W
R524	72532493	R002T4821J	RC	820 OHM 1/4W
R525	BZ210182	R002T4103J	RC	10K OHM 1/4W
R531	BZ210239	R00202681J	RC	680 OHM 1/2W
R536	BZ210119	R002T4102J	RC	1K OHM 1/4W
R601	BZ210119	R002T4102J	RC	1K OHM 1/4W
R602	BZ210164	R002T4104J	RC	100K OHM 1/4W
R603	79091111	R002T26R8J	RC	6.8 OHM 1/2W
R604	79091112	R002T4100J	RC	10 OHM 1/4W
R605	BZ210118	R002T4473J	RC	47K OHM 1/4W
R606	AD300651	R002T4272J	RC	2.7K OHM 1/4W
R607	BZ210121	R002T4182J	RC	1.8K OHM 1/4W
R608	AD301301	R002T4152J	RC	1.5K OHM 1/4W
R610	AD301203	R002T4101J	RC	100 OHM 1/4W
R611	BZ210107	R002T4750J	RC	75 OHM 1/4W
R612	79091126	R002T4680J	RC	68 OHM 1/4W

ELECTRICAL REPLACEMENT PARTS LIST

Location No.	TSB P/N	Reference No.	Description	
		RESISTORS		
R613	BZ210119	R002T4102J	RC	1K OHM 1/4W
R681	79091115	R002T4133J	RC	13K OHM 1/4W
R683	BZ210162	R002T4682J	RC	6.8K OHM 1/4W
R685	79091121	R002T4392J	RC	3.9K OHM 1/4W
R686	BZ210162	R002T4682J	RC	6.8K OHM 1/4W
R687	AD300651	R002T4272J	RC	2.7K OHM 1/4W
R688	BZ210060	R002T4332J	RC	3.3K OHM 1/4W
R689	BZ210182	R002T4103J	RC	10K OHM 1/4W
R690	79091119	R002T4331J	RC	330 OHM 1/4W
R694	79091119	R002T4331J	RC	330 OHM 1/4W
R701	79091188	R903N8391J	RC	390 OHM 1/8W
R702	79091323	R801R7391J	RC	390 OHM 1/10W
R703	79091185	R903N8332J	RC	3.3K OHM 1/8W
R704	79091185	R903N8332J	RC	3.3K OHM 1/8W
R705	79091198	R903N8682J	RC	6.8K OHM 1/8W
R706	79091192	R903N8473J	RC	47K OHM 1/8W
R707	79091192	R903N8473J	RC	47K OHM 1/8W
R708	79091198	R903N8682J	RC	6.8K OHM 1/8W
R709	79091198	R903N8682J	RC	6.8K OHM 1/8W
R710	79091192	R903N8473J	RC	47K OHM 1/8W
R711	79091192	R903N8473J	RC	47K OHM 1/8W
R712	79091198	R903N8682J	RC	6.8K OHM 1/8W
R714	79091182	R903N8273J	RC	27K OHM 1/8W
R716	79091185	R903N8332J	RC	3.3K OHM 1/8W
R717	BZ210147	R801R7225J	RC	2.2M OHM 1/10W
R718	AD300780	R903N8102J	RC	1K OHM 1/8W
R719	79091188	R903N8391J	RC	390 OHM 1/8W
R720	79091167	R903N8101J	RC	100 OHM 1/8W
R1001	79091271	R904N7103J	RC	10K OHM 1/10W
R1002	79091271	R904N7103J	RC	10K OHM 1/10W
R1003	79091135	R803R9104J	RC	100K OHM 1/16W
R1004	79091282	R904N7472J	RC	4.7K OHM 1/10W
R1005	79091282	R904N7472J	RC	4.7K OHM 1/10W
R1008	79091152	R803R9472J	RC	4.7K OHM 1/16W
R1009	79091282	R904N7472J	RC	4.7K OHM 1/10W
R1010	79091282	R904N7472J	RC	4.7K OHM 1/10W
R1011	79091282	R904N7472J	RC	4.7K OHM 1/10W
R1012	79091282	R904N7472J	RC	4.7K OHM 1/10W
R1014	79091271	R904N7103J	RC	10K OHM 1/10W
R1015	79091271	R904N7103J	RC	10K OHM 1/10W
R1016	79091271	R904N7103J	RC	10K OHM 1/10W
R1017	79091335	R904N7330J	RC	33 OHM 1/10W
R1018	79091271	R904N7103J	RC	10K OHM 1/10W
R1020	79091271	R904N7103J	RC	10K OHM 1/10W
R1021	79091282	R904N7472J	RC	4.7K OHM 1/10W
R1023	79091282	R904N7472J	RC	4.7K OHM 1/10W
R1024	79091282	R904N7472J	RC	4.7K OHM 1/10W
R1026	79091283	R904N7473J	RC	47K OHM 1/10W
R1027	79091283	R904N7473J	RC	47K OHM 1/10W
R1030	79091282	R904N7472J	RC	4.7K OHM 1/10W
R1031	79091271	R904N7103J	RC	10K OHM 1/10W
R1032	79091271	R904N7103J	RC	10K OHM 1/10W
R1034	79091271	R904N7103J	RC	10K OHM 1/10W
R1035	79091282	R904N7472J	RC	4.7K OHM 1/10W
R1036	79091282	R904N7472J	RC	4.7K OHM 1/10W
R1037	79091282	R904N7472J	RC	4.7K OHM 1/10W
R1038	79091271	R904N7103J	RC	10K OHM 1/10W
R1039	79091271	R904N7103J	RC	10K OHM 1/10W
R1040	79091271	R904N7103J	RC	10K OHM 1/10W
R1041	79091282	R904N7472J	RC	4.7K OHM 1/10W
R1046	79091282	R904N7472J	RC	4.7K OHM 1/10W
R1047	79091282	R904N7472J	RC	4.7K OHM 1/10W
R1048	79091271	R904N7103J	RC	10K OHM 1/10W
R1049	79091282	R904N7472J	RC	4.7K OHM 1/10W
R1050	79091282	R904N7472J	RC	4.7K OHM 1/10W
R1051	79091282	R904N7472J	RC	4.7K OHM 1/10W
R1053	79091282	R904N7472J	RC	4.7K OHM 1/10W
R1054	79091282	R904N7472J	RC	4.7K OHM 1/10W

ELECTRICAL REPLACEMENT PARTS LIST

Location No.	TSB P/N	Reference No.	Description	
		RESISTORS		
R1055	79091282	R904N7472J	RC	4.7K OHM 1/10W
R1066	79091271	R904N7103J	RC	10K OHM 1/10W
R1067	79091282	R904N7472J	RC	4.7K OHM 1/10W
R1068	79091282	R904N7472J	RC	4.7K OHM 1/10W
R1069	79091335	R904N7330J	RC	33 OHM 1/10W
R1070	79091335	R904N7330J	RC	33 OHM 1/10W
R1071	79091335	R904N7330J	RC	33 OHM 1/10W
R1072	79091335	R904N7330J	RC	33 OHM 1/10W
R1073	79091335	R904N7330J	RC	33 OHM 1/10W
R1074	79091282	R904N7472J	RC	4.7K OHM 1/10W
R1701	BZ210135	R002T4221J	RC	220 OHM 1/4W
R1702	BZ210182	R002T4103J	RC	10K OHM 1/4W
R1703	79091108	R002T2221J	RC	220 OHM 1/2W
R1706	79091121	R002T4392J	RC	3.9K OHM 1/4W
R1708	79091318	R801R7222J	RC	2.2K OHM 1/10W
R1709	AD301203	R002T4101J	RC	100 OHM 1/4W
R1710	79091322	R801R7330J	RC	33 OHM 1/10W
R1711	79091129	R801R7821F	RC	820 OHM 1/10W
R1713	79091128	R801R7122F	RC	1.2K OHM 1/10W
R1714	79091120	R002T4391J	RC	390 OHM 1/4W
R1715	79091116	R002T4151J	RC	150 OHM 1/4W
R1716	BZ210126	R002T4222J	RC	2.2K OHM 1/4W
R1720	BZ210119	R002T4102J	RC	1K OHM 1/4W
R2001	79091135	R803R9104J	RC	100K OHM 1/16W
R2002	79091150	R803R9333J	RC	33K OHM 1/16W
R2006	79091270	R904N7102J	RC	1K OHM 1/10W
R2007	79091270	R904N7102J	RC	1K OHM 1/10W
R2008	79091270	R904N7102J	RC	1K OHM 1/10W
R2009	79091270	R904N7102J	RC	1K OHM 1/10W
R2010	79091270	R904N7102J	RC	1K OHM 1/10W
R2011	79091270	R904N7102J	RC	1K OHM 1/10W
R2012	79091271	R904N7103J	RC	10K OHM 1/10W
R2013	79091271	R904N7103J	RC	10K OHM 1/10W
R2014	79091331	R904N7153J	RC	15K OHM 1/10W
R2016	79091271	R904N7103J	RC	10K OHM 1/10W
R2017	79091271	R904N7103J	RC	10K OHM 1/10W
R2020	79091276	R904N7221J	RC	220 OHM 1/10W
R2021	79091276	R904N7221J	RC	220 OHM 1/10W
R2022	79091276	R904N7221J	RC	220 OHM 1/10W
R2023	79091276	R904N7221J	RC	220 OHM 1/10W
R2024	79091276	R904N7221J	RC	220 OHM 1/10W
R2025	79091271	R904N7103J	RC	10K OHM 1/10W
R2026	79091271	R904N7103J	RC	10K OHM 1/10W
R2027	79091271	R904N7103J	RC	10K OHM 1/10W
R2028	79091333	R904N7220J	RC	22 OHM 1/10W
R2029	79091271	R904N7103J	RC	10K OHM 1/10W
R2030	79091156	R803R9562J	RC	5.6K OHM 1/16W
R2031	79091271	R904N7103J	RC	10K OHM 1/10W
R2033	79091276	R904N7221J	RC	220 OHM 1/10W
R2035	79091334	R904N7273J	RC	27K OHM 1/10W
R2036	79091271	R904N7103J	RC	10K OHM 1/10W
R2037	79091333	R904N7220J	RC	22 OHM 1/10W
R2038	79091134	R803R9103J	RC	10K OHM 1/16W
R2039	79091134	R803R9103J	RC	10K OHM 1/16W
R2041	79091136	R803R9105J	RC	1M OHM 1/16W
R2042	79091329	R904N7122J	RC	1.2K OHM 1/10W
R2043	79091332	R904N7182J	RC	1.8K OHM 1/10W
R2044	79091278	R904N7223J	RC	22K OHM 1/10W
R2045	79091278	R904N7223J	RC	22K OHM 1/10W
R2046	79091139	R803R9151J	RC	150 OHM 1/16W
R2052	79091329	R904N7122J	RC	1.2K OHM 1/10W
R2054	79091158	R803R9681J	RC	680 OHM 1/16W
R2064	79091276	R904N7221J	RC	220 OHM 1/10W
R2301	79091271	R904N7103J	RC	10K OHM 1/10W
R2302	79091271	R904N7103J	RC	10K OHM 1/10W
R2303	79091271	R904N7103J	RC	10K OHM 1/10W
R2304	79091271	R904N7103J	RC	10K OHM 1/10W
R2305	79091271	R904N7103J	RC	10K OHM 1/10W

ELECTRICAL REPLACEMENT PARTS LIST

Location No.	TSB P/N	Reference No.	Description	
		RESISTORS		
R2306	79091278	R904N7223J	RC	22K OHM 1/10W
R2307	79091271	R904N7103J	RC	10K OHM 1/10W
R2308	79091331	R904N7153J	RC	15K OHM 1/10W
R2309	79091269	R904N7101J	RC	100 OHM 1/10W
R2310	79091271	R904N7103J	RC	10K OHM 1/10W
R2311	79091269	R904N7101J	RC	100 OHM 1/10W
R2312	79091269	R904N7101J	RC	100 OHM 1/10W
R2313	79091271	R904N7103J	RC	10K OHM 1/10W
R2314	79091138	R803R9123J	RC	12K OHM 1/16W
R2315	79091278	R904N7223J	RC	22K OHM 1/10W
R2316	79091271	R904N7103J	RC	10K OHM 1/10W
R2317	79091286	R904N7562J	RC	5.6K OHM 1/10W
R2318	79091271	R904N7103J	RC	10K OHM 1/10W
R2319	79091271	R904N7103J	RC	10K OHM 1/10W
R2320	79091271	R904N7103J	RC	10K OHM 1/10W
R2321	79091331	R904N7153J	RC	15K OHM 1/10W
R2322	79091271	R904N7103J	RC	10K OHM 1/10W
R2323	79091273	R904N7105J	RC	1M OHM 1/10W
R2324	79091270	R904N7102J	RC	1K OHM 1/10W
R2603	79091134	R803R9103J	RC	10K OHM 1/16W
R2604	79091270	R904N7102J	RC	1K OHM 1/10W
R2605	79091270	R904N7102J	RC	1K OHM 1/10W
R2606	79091342	R904N7823J	RC	82K OHM 1/10W
R2607	79091342	R904N7823J	RC	82K OHM 1/10W
R2608	79091333	R904N7220J	RC	22 OHM 1/10W
R2609	79091333	R904N7220J	RC	22 OHM 1/10W
R2610	79091333	R904N7220J	RC	22 OHM 1/10W
R2611	79091333	R904N7220J	RC	22 OHM 1/10W
R2614	79091271	R904N7103J	RC	10K OHM 1/10W
R2615	79091330	R904N7123J	RC	12K OHM 1/10W
R2617	79091133	R803R9102J	RC	1K OHM 1/16W
R2618	79091133	R803R9102J	RC	1K OHM 1/16W
R2619	79091147	R803R92R2J	RC	2.2 OHM 1/16W
R2620	79091339	R904N7561J	RC	560 OHM 1/10W
R2621	79091270	R904N7102J	RC	1K OHM 1/10W
R2622	79091334	R904N7273J	RC	27K OHM 1/10W
R2623	79091338	R904N7471J	RC	470 OHM 1/10W
R2625	79091271	R904N7103J	RC	10K OHM 1/10W
R2626	79091334	R904N7273J	RC	27K OHM 1/10W
R2627	79091336	R904N7331J	RC	330 OHM 1/10W
R2628	79091336	R904N7331J	RC	330 OHM 1/10W
R2629	79091334	R904N7273J	RC	27K OHM 1/10W
R2630	79091336	R904N7331J	RC	330 OHM 1/10W
R2631	79091277	R904N7222J	RC	2.2K OHM 1/10W
R2632	79091340	R904N7682J	RC	6.8K OHM 1/10W
R2633	79091157	R803R9563J	RC	56K OHM 1/16W
R2634	79091336	R904N7331J	RC	330 OHM 1/10W
R2638	79091274	R904N7151J	RC	150 OHM 1/10W
R2639	79091341	R904N7683J	RC	68K OHM 1/10W
R2640	79091336	R904N7331J	RC	330 OHM 1/10W
R2642	79091277	R904N7222J	RC	2.2K OHM 1/10W
R2643	79091277	R904N7222J	RC	2.2K OHM 1/10W
R2644	79091336	R904N7331J	RC	330 OHM 1/10W
R2645	79091145	R803R9223J	RC	22K OHM 1/16W
R2646	79091153	R803R9473J	RC	47K OHM 1/16W
R2647	79091277	R904N7222J	RC	2.2K OHM 1/10W
R2649	79091283	R904N7473J	RC	47K OHM 1/10W
R2650	79091277	R904N7222J	RC	2.2K OHM 1/10W
R2651	79091336	R904N7331J	RC	330 OHM 1/10W
R2652	79091336	R904N7331J	RC	330 OHM 1/10W
R2653	79091283	R904N7473J	RC	47K OHM 1/10W
R2654	79091283	R904N7473J	RC	47K OHM 1/10W
R2655	79091337	R904N7333J	RC	33K OHM 1/10W
R2656	79091283	R904N7473J	RC	47K OHM 1/10W
R2657	79091336	R904N7331J	RC	330 OHM 1/10W
R2658	79091337	R904N7333J	RC	33K OHM 1/10W
R2659	79091272	R904N7104J	RC	100K OHM 1/10W
R2660	79091278	R904N7223J	RC	22K OHM 1/10W

ELECTRICAL REPLACEMENT PARTS LIST

Location No.	TSB P/N	Reference No.	Description	
		RESISTORS		
R2661	79091334	R904N7273J	RC	27K OHM 1/10W
R2662	79091144	R803R9222J	RC	2.2K OHM 1/16W
R2663	79091271	R904N7103J	RC	10K OHM 1/10W
R2664	79091278	R904N7223J	RC	22K OHM 1/10W
R2665	79091278	R904N7223J	RC	22K OHM 1/10W
R2666	79091278	R904N7223J	RC	22K OHM 1/10W
R2667	79091277	R904N7222J	RC	2.2K OHM 1/10W
R2668	79091278	R904N7223J	RC	22K OHM 1/10W
R2669	79091135	R803R9104J	RC	100K OHM 1/16W
R2670	79091144	R803R9222J	RC	2.2K OHM 1/16W
R2671	79091271	R904N7103J	RC	10K OHM 1/10W
R2672	79091135	R803R9104J	RC	100K OHM 1/16W
R2673	79091271	R904N7103J	RC	10K OHM 1/10W
R2674	79091271	R904N7103J	RC	10K OHM 1/10W
R2675	79091271	R904N7103J	RC	10K OHM 1/10W
R3001	79091195	R903N8562J	RC	5.6K OHM 1/8W
R3002	79091113	R002T4121J	RC	120 OHM 1/4W
R3003	79091185	R903N8332J	RC	3.3K OHM 1/8W
R3004	79091187	R903N8334J	RC	330K OHM 1/8W
R3006	79091192	R903N8473J	RC	47K OHM 1/8W
R3007	79091198	R903N8682J	RC	6.8K OHM 1/8W
R3008	AD300780	R903N8102J	RC	1K OHM 1/8W
R3009	BZ210274	R903N8105J	RC	1M OHM 1/8W
R3010	79091168	R903N8103J	RC	10K OHM 1/8W
R3011	BZ210118	R002T4473J	RC	47K OHM 1/4W
R3012	BZ210143	R903N8563J	RC	56K OHM 1/8W
R3013	79091192	R903N8473J	RC	47K OHM 1/8W
R3014	BZ210143	R903N8563J	RC	56K OHM 1/8W
R3015	BZ210118	R002T4473J	RC	47K OHM 1/4W
R3016	AD301004	R801R7271J	RC	270 OHM 1/10W
R3017	79091194	R903N8561J	RC	560 OHM 1/8W
R3019	BZ210118	R002T4473J	RC	47K OHM 1/4W
R3020	79091194	R903N8561J	RC	560 OHM 1/8W
R3022	79091317	R801R7154J	RC	150K OHM 1/10W
R3024	79091174	R903N8153J	RC	15K OHM 1/8W
R3025	79091324	R801R7471J	RC	470 OHM 1/10W
R3026	79091320	R801R7224J	RC	220K OHM 1/10W
R3027	79091174	R903N8153J	RC	15K OHM 1/8W
R3028	79091192	R903N8473J	RC	47K OHM 1/8W
R3029	79091192	R903N8473J	RC	47K OHM 1/8W
R3030	79091195	R903N8562J	RC	5.6K OHM 1/8W
R3031	BZ210274	R903N8105J	RC	1M OHM 1/8W
R3032	79091168	R903N8103J	RC	10K OHM 1/8W
R3033	79091168	R903N8103J	RC	10K OHM 1/8W
R3034	BZ210216	R801R7105J	RC	1M OHM 1/10W
R3037	79091192	R903N8473J	RC	47K OHM 1/8W
R3038	BZ210122	R002T4472J	RC	4.7K OHM 1/4W
R3039	79091178	R903N8223J	RC	22K OHM 1/8W
R3040	BZ210122	R002T4472J	RC	4.7K OHM 1/4W
R3043	79091193	R903N8474J	RC	470K OHM 1/8W
R3044	79091185	R903N8332J	RC	3.3K OHM 1/8W
R3045	79091185	R903N8332J	RC	3.3K OHM 1/8W
R3046	79091168	R903N8103J	RC	10K OHM 1/8W
R3047	79091168	R903N8103J	RC	10K OHM 1/8W
R3048	BZ210122	R002T4472J	RC	4.7K OHM 1/4W
R3049	79091192	R903N8473J	RC	47K OHM 1/8W
R3050	AD301203	R002T4101J	RC	100 OHM 1/4W
R3051	79091177	R903N8183J	RC	18K OHM 1/8W
R3053	79091193	R903N8474J	RC	470K OHM 1/8W
R3054	BZ210122	R002T4472J	RC	4.7K OHM 1/4W
R3055	BZ210192	R002T4223J	RC	22K OHM 1/4W
R3056	BZ210119	R002T4102J	RC	1K OHM 1/4W
R3057	79091178	R903N8223J	RC	22K OHM 1/8W
R3062	AD300780	R903N8102J	RC	1K OHM 1/8W
R3063	AD300780	R903N8102J	RC	1K OHM 1/8W
R3083	79091186	R903N8333J	RC	33K OHM 1/8W
R3087	79091186	R903N8333J	RC	33K OHM 1/8W
R4001	79091271	R904N7103J	RC	10K OHM 1/10W

ELECTRICAL REPLACEMENT PARTS LIST

Location No.	TSB P/N	Reference No.	Description	
		RESISTORS		
R4002	79091271	R904N7103J	RC	10K OHM 1/10W
R4003	79091271	R904N7103J	RC	10K OHM 1/10W
R4004	79091271	R904N7103J	RC	10K OHM 1/10W
R4005	79091269	R904N7101J	RC	100 OHM 1/10W
R4006	79091134	R803R9103J	RC	10K OHM 1/16W
R4007	79091271	R904N7103J	RC	10K OHM 1/10W
R4008	79091162	R803R9821F	RC	820 OHM 1/16W
R4009	79091142	R803R9220J	RC	22 OHM 1/16W
R4010	79091269	R904N7101J	RC	100 OHM 1/10W
R4011	79091269	R904N7101J	RC	100 OHM 1/10W
R4012	79091152	R803R9472J	RC	4.7K OHM 1/16W
R4013	79091330	R904N7123J	RC	12K OHM 1/10W
R4015	79091335	R904N7330J	RC	33 OHM 1/10W
R4016	79091269	R904N7101J	RC	100 OHM 1/10W
R4017	79091269	R904N7101J	RC	100 OHM 1/10W
R4018	79091269	R904N7101J	RC	100 OHM 1/10W
R4019	79091271	R904N7103J	RC	10K OHM 1/10W
R4021	79091136	R803R9105J	RC	1M OHM 1/16W
R4023	79091282	R904N7472J	RC	4.7K OHM 1/10W
R4024	79091282	R904N7472J	RC	4.7K OHM 1/10W
R4025	79091282	R904N7472J	RC	4.7K OHM 1/10W
R4026	79091282	R904N7472J	RC	4.7K OHM 1/10W
R4027	79091130	R803R9100J	RC	10 OHM 1/16W
R4028	79091154	R803R9511F	RC	510 OHM 1/16W
R4029	79091132	R803R9102F	RC	1K OHM 1/16W
R4030	79091270	R904N7102J	RC	1K OHM 1/10W
R8001	79091255	R801R7750J	RC	75 OHM 1/10W
R8002	79091321	R801R72R2J	RC	2.2 OHM 1/10W
R8003	79091327	R801R7680J	RC	68 OHM 1/10W
R8004	79091314	R801R7121J	RC	120 OHM 1/10W
R8005	79091312	R801R7100J	RC	10 OHM 1/10W
R8006	79091312	R801R7100J	RC	10 OHM 1/10W
R8007	79091312	R801R7100J	RC	10 OHM 1/10W
R8008	79091316	R801R7150J	RC	15 OHM 1/10W
R8009	79091110	R002T2471J	RC	470 OHM 1/2W
R8010	79091255	R801R7750J	RC	75 OHM 1/10W
R8011	79091313	R801R7101J	RC	100 OHM 1/10W
R8014	79091323	R801R7391J	RC	390 OHM 1/10W
R8015	79091120	R002T4391J	RC	390 OHM 1/4W
R8016	79091318	R801R7222J	RC	2.2K OHM 1/10W
R8017	79091318	R801R7222J	RC	2.2K OHM 1/10W
R8020	79091168	R903N8103J	RC	10K OHM 1/8W
R8021	79091168	R903N8103J	RC	10K OHM 1/8W
R8022	79091124	R002T4560J	RC	56 OHM 1/4W
R8023	79091168	R903N8103J	RC	10K OHM 1/8W
R8024	BZ210164	R002T4104J	RC	100K OHM 1/4W
R8025	79091169	R903N8104J	RC	100K OHM 1/8W
R8026	79091168	R903N8103J	RC	10K OHM 1/8W
R8027	AD300780	R903N8102J	RC	1K OHM 1/8W
R8028	79091118	R002T42R2J	RC	2.2 OHM 1/4W
R8029	79091118	R002T42R2J	RC	2.2 OHM 1/4W
R8030	79091118	R002T42R2J	RC	2.2 OHM 1/4W
R8031	AD300780	R903N8102J	RC	1K OHM 1/8W
R8032	79091324	R801R7471J	RC	470 OHM 1/10W
R8033	79091168	R903N8103J	RC	10K OHM 1/8W
R8034	79091203	R903N8823J	RC	82K OHM 1/8W
R8035	AD300031	R801R7272J	RC	2.7K OHM 1/10W
R8038	AD300031	R801R7272J	RC	2.7K OHM 1/10W
R8040	79091324	R801R7471J	RC	470 OHM 1/10W
R8043	79091328	R801R7823J	RC	82K OHM 1/10W
R8045	AD301003	R801R7102J	RC	1K OHM 1/10W
R8046	AD301003	R801R7102J	RC	1K OHM 1/10W
R8047	AD300780	R903N8102J	RC	1K OHM 1/8W
R8048	79091168	R903N8103J	RC	10K OHM 1/8W
R8049	79091168	R903N8103J	RC	10K OHM 1/8W
R8050	79091171	R903N8123J	RC	12K OHM 1/8W
R8051	79091171	R903N8123J	RC	12K OHM 1/8W
R8052	79091202	R903N8822J	RC	8.2K OHM 1/8W

ELECTRICAL REPLACEMENT PARTS LIST

Location No.	TSB P/N	Reference No.	Description	
		RESISTORS		
R8053	79091181	R903N8272J	RC	2.7K OHM 1/8W
R8054	79091202	R903N8822J	RC	8.2K OHM 1/8W
R8055	79091203	R903N8823J	RC	82K OHM 1/8W
R8056	79091181	R903N8272J	RC	2.7K OHM 1/8W
R8057	79091113	R002T4121J	RC	120 OHM 1/4W
R8058	79091113	R002T4121J	RC	120 OHM 1/4W
R8059	BZ210106	R002T4823J	RC	82K OHM 1/4W
R8060	79091328	R801R7823J	RC	82K OHM 1/10W
R8061	79091326	R801R7561J	RC	560 OHM 1/10W
R8065	79091324	R801R7471J	RC	470 OHM 1/10W
R8067	79091324	R801R7471J	RC	470 OHM 1/10W
R8068	79091325	R801R7474J	RC	470K OHM 1/10W
R8069	79091191	R903N8472J	RC	4.7K OHM 1/8W
R8072	72532529	R801R7470J	RC	47 OHM 1/10W
R8073	79091122	R002T4470J	RC	47 OHM 1/4W
R8074	79091326	R801R7561J	RC	560 OHM 1/10W
R8075	79091328	R801R7823J	RC	82K OHM 1/10W
R8076	79091191	R903N8472J	RC	4.7K OHM 1/8W
R8082	79091185	R903N8332J	RC	3.3K OHM 1/8W
R8501	79091161	R803R9750F	RC	75 OHM 1/16W
R8502	79091161	R803R9750F	RC	75 OHM 1/16W
R8503	79091161	R803R9750F	RC	75 OHM 1/16W
R8504	79091161	R803R9750F	RC	75 OHM 1/16W
R8510	79091271	R904N7103J	RC	10K OHM 1/10W
R8511	79091134	R803R9103J	RC	10K OHM 1/16W
R8514	79091161	R803R9750F	RC	75 OHM 1/16W
R8515	79091161	R803R9750F	RC	75 OHM 1/16W
R8516	79091287	R904N7681J	RC	680 OHM 1/10W
R8517	79091161	R803R9750F	RC	75 OHM 1/16W
R8518	79091161	R803R9750F	RC	75 OHM 1/16W
R8519	79091161	R803R9750F	RC	75 OHM 1/16W
R8520	79091270	R904N7102J	RC	1K OHM 1/10W
R8521	79091161	R803R9750F	RC	75 OHM 1/16W
R8522	79091272	R904N7104J	RC	100K OHM 1/10W
R8523	79091272	R904N7104J	RC	100K OHM 1/10W
		CAPACITORS		
C101	79091311	P232W1223J	CMP	0.022 UF 100V MMTS
C101	72001276	P235W1223J	CMP	0.022 UF 100V MKT
C103	72001221	E50HU0220M	CE	22 UF 6.3V
C104	72001214	E02LU0221M	CE	220 UF 6.3V
C105	72001221	E50HU0220M	CE	22 UF 6.3V
C106	79091075	CS0RB0414K	CC	0.01 UF 50V B
C107	79091078	CS0RB04E4K	CC	0.015 UF 50V B
C108	79091075	CS0RB0414K	CC	0.01 UF 50V B
C109	79091073	CS0RB0315K	CC	0.1 UF 25V B
C110	72531753	E02LU2470M	CE	47 UF 16V
C112	72001214	E02LU0221M	CE	220 UF 6.3V
C114	79091073	CS0RB0315K	CC	0.1 UF 25V B
C115	79091095	E02LU3330M	CE	33 UF 25V
C116	BZ110151	CS0RF0415Z	CC	0.1 UF 50V F
C118	79091075	CS0RB0414K	CC	0.01 UF 50V B
C119	72531757	E02LU5100M	CE	10 UF 50V
C120	72531765	E50HU5010M	CE	1 UF 50V
C121	79091080	CS0RB04K3K	CC	0.0027UF 50V B
C122	79091076	CS0RB04B3K	CC	0.0012UF 50V B
C123	79099014	E02LU54R7M	CE	4.7 UF 50V
C124	72531756	E02LU5010M	CE	1 UF 50V
C125	79091047	CS0KB04N2K	CC	390 PF 50V B
C126	79091073	CS0RB0315K	CC	0.1 UF 25V B
C127	79091085	CS0RCH4E2J	CC	150 PF 50V CH
C128	79091086	CS0RCH4N1J	CC	39 PF 50V CH
C130	79091073	CS0RB0315K	CC	0.1 UF 25V B
C131	79091094	E02LU0101M	CE	100 UF 6.3V
C132	72531756	E02LU5010M	CE	1 UF 50V
C133	72531756	E02LU5010M	CE	1 UF 50V
C134	72531756	E02LU5010M	CE	1 UF 50V
C135	79091096	E02LU5R22M	CE	0.22 UF 50V
C136	72531755	E02LU4220M	CE	22 UF 35V

ELECTRICAL REPLACEMENT PARTS LIST

Location No.	TSB P/N	Reference No.	Description	
		CAPACITORS		
C137	72531756	E02LU5010M	CE	1 UF 50V
C138	72531756	E02LU5010M	CE	1 UF 50V
C139	BZ110151	CS0RF0415Z	CC	0.1 UF 50V F
C140	79091092	E00NU24R7M	CE	4.7 UF 16 V
C141	79091075	CS0RB0414K	CC	0.01 UF 50V B
C142	72531753	E02LU2470M	CE	47 UF 16V
C143	BZ110151	CS0RF0415Z	CC	0.1 UF 50V F
C144	79091075	CS0RB0414K	CC	0.01 UF 50V B
C145	79091079	CS0RB04H4K	CC	0.022 UF 50V B
C146	72531765	E50HU5010M	CE	1 UF 50V
C147	79091079	CS0RB04H4K	CC	0.022 UF 50V B
C148	72531765	E50HU5010M	CE	1 UF 50V
C151	72531765	E50HU5010M	CE	1 UF 50V
C152	72531753	E02LU2470M	CE	47 UF 16V
C154	79091073	CS0RB0315K	CC	0.1 UF 25V B
C155	79091073	CS0RB0315K	CC	0.1 UF 25V B
C156	BZ110151	CS0RF0415Z	CC	0.1 UF 50V F
C158	79091073	CS0RB0315K	CC	0.1 UF 25V B
C162	79091073	CS0RB0315K	CC	0.1 UF 25V B
C163	72001223	E50HU0470M	CE	47 UF 6.3V
C165	79091091	CS0RF04Q4Z	CC	0.047 UF 50V F
C166	79091083	CS0RB04U4K	CC	0.068 UF 50V B
C169	79091091	CS0RF04Q4Z	CC	0.047 UF 50V F
C172	79091051	CS0KCH4H1J	CC	22 PF 50V CH
C303	BZ110151	CS0RF0415Z	CC	0.1 UF 50V F
C304	79091090	CS0RF0414Z	CC	0.01 UF 50V F
C308	72001214	E02LU0221M	CE	220 UF 6.3V
C309	72001214	E02LU0221M	CE	220 UF 6.3V
C313	72531763	E50HU2100M	CE	10 UF 16V
C315	72531763	E50HU2100M	CE	10 UF 16V
C316	BZ110151	CS0RF0415Z	CC	0.1 UF 50V F
C318	72531763	E50HU2100M	CE	10 UF 16V
⚠ C501	79099006	E02L03222M	CE	2200 UF 25V
⚠ C502	BZ110035	P2122B104M	CMP	0.1 UF 275V ECQUL
⚠ C502	79099007	P2472B104M	CMP	0.1 UF 275V PHE840
⚠ C505	79099008	E02LU2221M	CE	220 UF 16V
⚠ C507	79099009	C0JTB0513K	CC	0.001 UF 500V B
C508	72531780	P1S3T0822J	CP	0.0082UF 50V
C509	79091106	P1S3T0183J	CP	0.018 UF 50V
C510	72001210	E02LT3471M	CE	470 UF 25V
⚠ C511	79099010	E62NFC221M	CE	220 UF 200V
C513	79091044	C0JTB05H2K	CC	220 PF 500V B
C514	72001215	E02LU1331M	CE	330 UF 10V
C515	BZ110038	C0JFE0514M	CC	0.01 UF 500V E
⚠ C516	AD301391	CD39E0MQ3M	CC	0.0047UF 250V
C517	79097755	E02LT0102M	CE	1000 UF 6.3V
⚠ C518	79099012	E02LF1332M	CE	3300 UF 10V
⚠ C519	AD301021	E02LF0222M	CE	2200 UF 6.3V
C520	AD300789	CQGTF0415Z	CC	0.1 UF 50V F
C521	72531757	E02LU5100M	CE	10 UF 50V
⚠ C522	79099014	E02LU54R7M	CE	4.7 UF 50V
C523	72001215	E02LU1331M	CE	330 UF 10V
C524	BZ110255	CQGTB0415K	CC	0.1 UF 50V B
C525	BZ110172	C03L0R7U2K	CC	680 PF 2KV R
C527	72001216	E02LU2101M	CE	100 UF 16V
C528	72001216	E02LU2101M	CE	100 UF 16V
C530	72001214	E02LU0221M	CE	220 UF 6.3V
C604	BZ110098	CHGTB0413K	CC	0.001 UF 50V B
C607	AD300789	CQGTF0415Z	CC	0.1 UF 50V F
C608	72001220	E50HU0101M	CE	100 UF 6.3V
C609	AD300789	CQGTF0415Z	CC	0.1 UF 50V F
C613	72001220	E50HU0101M	CE	100 UF 6.3V
C616	72531763	E50HU2100M	CE	10 UF 16V
C653	72001219	E02LU4470M	CE	47 UF 35V
C701	79091079	CS0RB04H4K	CC	0.022 UF 50V B
C702	72531758	E02LU53R3M	CE	3.3 UF 50V
C703	79099014	E02LU54R7M	CE	4.7 UF 50V
C704	79099014	E02LU54R7M	CE	4.7 UF 50V

ELECTRICAL REPLACEMENT PARTS LIST

Location No.	TSB P/N	Reference No.	Description	
		CAPACITORS		
C705	79099014	E02LU54R7M	CE	4.7 UF 50V
C706	79099014	E02LU54R7M	CE	4.7 UF 50V
C707	79091073	CS0RB0315K	CC	0.1 UF 25V B
C708	72531757	E02LU5100M	CE	10 UF 50V
C709	72531757	E02LU5100M	CE	10 UF 50V
C710	79091076	CS0RB04B3K	CC	0.0012UF 50V B
C711	72531757	E02LU5100M	CE	10 UF 50V
C712	72531757	E02LU5100M	CE	10 UF 50V
C713	72531763	E50HU2100M	CE	10 UF 16V
C714	72531757	E02LU5100M	CE	10 UF 50V
C715	72531793	CS0RCH4U2J	CC	680 PF 50V CH
C716	72531765	E50HU5010M	CE	1 UF 50V
C717	79091076	CS0RB04B3K	CC	0.0012UF 50V B
C718	72531757	E02LU5100M	CE	10 UF 50V
C719	72531757	E02LU5100M	CE	10 UF 50V
C720	72001222	E50HU0330M	CE	33 UF 6.3V
C721	72531793	CS0RCH4U2J	CC	680 PF 50V CH
C722	79091073	CS0RB0315K	CC	0.1 UF 25V B
C723	79091090	CS0RF0414Z	CC	0.01 UF 50V F
C724	79091090	CS0RF0414Z	CC	0.01 UF 50V F
C725	79091073	CS0RB0315K	CC	0.1 UF 25V B
C726	79091078	CS0RB04E4K	CC	0.015 UF 50V B
C727	72531757	E02LU5100M	CE	10 UF 50V
C728	72531763	E50HU2100M	CE	10 UF 16V
C729	79091075	CS0RB0414K	CC	0.01 UF 50V B
C730	79091078	CS0RB04E4K	CC	0.015 UF 50V B
C731	79091096	E02LU5R22M	CE	0.22 UF 50V
C732	79091090	CS0RF0414Z	CC	0.01 UF 50V F
C734	79091073	CS0RB0315K	CC	0.1 UF 25V B
C735	79099014	E02LU54R7M	CE	4.7 UF 50V
C736	79091074	CS0RB0413K	CC	0.001 UF 50V B
C737	72001227	E50HU54R7M	CE	4.7 UF 50V
C738	79091090	CS0RF0414Z	CC	0.01 UF 50V F
C739	72001223	E50HU0470M	CE	47 UF 6.3V
C740	72001222	E50HU0330M	CE	33 UF 6.3V
C741	72531757	E02LU5100M	CE	10 UF 50V
C742	72531757	E02LU5100M	CE	10 UF 50V
C743	79091096	E02LU5R22M	CE	0.22 UF 50V
C744	BZ110151	CS0RF0415Z	CC	0.1 UF 50V F
C746	BZ110151	CS0RF0415Z	CC	0.1 UF 50V F
C747	72531757	E02LU5100M	CE	10 UF 50V
C748	BZ110151	CS0RF0415Z	CC	0.1 UF 50V F
C749	BZ110151	CS0RF0415Z	CC	0.1 UF 50V F
C750	AD301729	E02LU52R2M	CE	2.2 UF 50V
C751	BZ110151	CS0RF0415Z	CC	0.1 UF 50V F
C752	72531755	E02LU4220M	CE	22 UF 35V
C754	72531753	E02LU2470M	CE	47 UF 16V
C755	79091079	CS0RB04H4K	CC	0.022 UF 50V B
C756	79097756	E50HU5100M	CE	10 UF 50V
C757	72531757	E02LU5100M	CE	10 UF 50V
C758	72531755	E02LU4220M	CE	22 UF 35V
C759	72531755	E02LU4220M	CE	22 UF 35V
C760	72531765	E50HU5010M	CE	1 UF 50V
C761	72001223	E50HU0470M	CE	47 UF 6.3V
C762	72531793	CS0RCH4U2J	CC	680 PF 50V CH
C763	72531793	CS0RCH4U2J	CC	680 PF 50V CH
C1001	79091246	CS0YF0315Z	CC	0.1 UF 25V F
C1002	79091061	CS0PCH4G1J	CC	18 PF 50V CH
C1003	79091061	CS0PCH4G1J	CC	18 PF 50V CH
C1004	79091100	E62FU0151M	CE	150 UF 6.3V
C1005	79091246	CS0YF0315Z	CC	0.1 UF 25V F
C1006	79091072	CS0PF0315Z	CC	0.1 UF 25V F
C1007	72531761	E50HU0221M	CE	220 UF 6.3V
C1008	79091246	CS0YF0315Z	CC	0.1 UF 25V F
C1009	79091246	CS0YF0315Z	CC	0.1 UF 25V F
C1010	79091067	CS0PCH4Q2J	CC	470 PF 50V CH
C1011	79091246	CS0YF0315Z	CC	0.1 UF 25V F
C1012	72531764	E50HU2470M	CE	47 UF 16V

ELECTRICAL REPLACEMENT PARTS LIST

Location No.	TSB P/N	Reference No.	Description	
		CAPACITORS		
C1013	79091072	CS0PF0315Z	CC	0.1 UF 25V F
C1014	79091072	CS0PF0315Z	CC	0.1 UF 25V F
C1015	79091246	CS0YF0315Z	CC	0.1 UF 25V F
C1016	79091057	CS0PCH412J	CC	100 PF 50V CH
C1017	79091057	CS0PCH412J	CC	100 PF 50V CH
C1018	72001165	CS0RB0216K	CC	1 UF 16V B
C1019	79091246	CS0YF0315Z	CC	0.1 UF 25V F
C1020	79091303	CS0YCH4H1J	CC	22 PF 50V CH
C1021	79091246	CS0YF0315Z	CC	0.1 UF 25V F
C1702	72531756	E02LU5010M	CE	1 UF 50V
C1703	72531757	E02LU5100M	CE	10 UF 50V
C1706	72531755	E02LU4220M	CE	22 UF 35V
C1708	79097755	E02LT0102M	CE	1000 UF 6.3V
C1709	72531757	E02LU5100M	CE	10 UF 50V
C2002	79091052	CS0PB0215K	CC	0.1 UF 16V B
C2003	79091234	CS0YB0413K	CC	0.001 UF 50V B
C2006	79091234	CS0YB0413K	CC	0.001 UF 50V B
C2009	79091052	CS0PB0215K	CC	0.1 UF 16V B
C2010	72531761	E50HU0221M	CE	220 UF 6.3V
C2011	79091234	CS0YB0413K	CC	0.001 UF 50V B
C2014	79091234	CS0YB0413K	CC	0.001 UF 50V B
C2015	79091234	CS0YB0413K	CC	0.001 UF 50V B
C2016	79091234	CS0YB0413K	CC	0.001 UF 50V B
C2017	79091306	CS0YCH4Q2J	CC	470 PF 50V CH
C2018	79091306	CS0YCH4Q2J	CC	470 PF 50V CH
C2019	79091052	CS0PB0215K	CC	0.1 UF 16V B
C2020	79091053	CS0PB0413K	CC	0.001 UF 50V B
C2021	79091233	CS0YB0215K	CC	0.1 UF 16V B
C2023	79091100	E62FU0151M	CE	150 UF 6.3V
C2024	79091233	CS0YB0215K	CC	0.1 UF 16V B
C2030	79091052	CS0PB0215K	CC	0.1 UF 16V B
C2031	79091052	CS0PB0215K	CC	0.1 UF 16V B
C2032	79091233	CS0YB0215K	CC	0.1 UF 16V B
C2033	79091100	E62FU0151M	CE	150 UF 6.3V
C2034	79091235	CS0YB0414K	CC	0.01 UF 50V B
C2035	79091233	CS0YB0215K	CC	0.1 UF 16V B
C2036	79091233	CS0YB0215K	CC	0.1 UF 16V B
C2037	79091233	CS0YB0215K	CC	0.1 UF 16V B
C2038	79091233	CS0YB0215K	CC	0.1 UF 16V B
C2039	79091059	CS0PCH4E1J	CC	15 PF 50V CH
C2040	79091059	CS0PCH4E1J	CC	15 PF 50V CH
C2041	79091233	CS0YB0215K	CC	0.1 UF 16V B
C2043	79091242	CS0YCH4E2J	CC	150 PF 50V CH
C2045	79091100	E62FU0151M	CE	150 UF 6.3V
C2046	72531761	E50HU0221M	CE	220 UF 6.3V
C2048	79091233	CS0YB0215K	CC	0.1 UF 16V B
C2049	79091052	CS0PB0215K	CC	0.1 UF 16V B
C2050	79091100	E62FU0151M	CE	150 UF 6.3V
C2051	79091100	E62FU0151M	CE	150 UF 6.3V
C2052	79091052	CS0PB0215K	CC	0.1 UF 16V B
C2053	79091100	E62FU0151M	CE	150 UF 6.3V
C2301	79091052	CS0PB0215K	CC	0.1 UF 16V B
C2303	79091233	CS0YB0215K	CC	0.1 UF 16V B
C2304	79091233	CS0YB0215K	CC	0.1 UF 16V B
C2305	79091233	CS0YB0215K	CC	0.1 UF 16V B
C2306	79091233	CS0YB0215K	CC	0.1 UF 16V B
C2307	79091237	CS0YB04H3K	CC	0.0022UF 50V B
C2308	79091233	CS0YB0215K	CC	0.1 UF 16V B
C2309	79091097	E50HU2101M	CE	100 UF 16 V
C2310	79091233	CS0YB0215K	CC	0.1 UF 16V B
C2315	79091052	CS0PB0215K	CC	0.1 UF 16V B
C2601	72531764	E50HU2470M	CE	47 UF 16V
C2602	72531764	E50HU2470M	CE	47 UF 16V
C2605	79091308	CS0YCH4W1J	CC	82 PF 50V CH
C2608	79091052	CS0PB0215K	CC	0.1 UF 16V B
C2609	79091234	CS0YB0413K	CC	0.001 UF 50V B
C2610	79091234	CS0YB0413K	CC	0.001 UF 50V B
C2611	72531763	E50HU2100M	CE	10 UF 16V

ELECTRICAL REPLACEMENT PARTS LIST

Location No.	TSB P/N	Reference No.	Description	
		CAPACITORS		
C2612	72531763	E50HU2100M	CE	10 UF 16V
C2613	79091305	CS0YCH4Q1J	CC	47 PF 50V CH
C2614	79091052	CS0PB0215K	CC	0.1 UF 16V B
C2615	79091304	CS0YCH4N1J	CC	39 PF 50V CH
C2616	79091307	CS0YCH4S1J	CC	56 PF 50V CH
C2617	79091060	CS0PCH4E2J	CC	150 PF 50V CH
C2618	72531761	E50HU0221M	CE	220 UF 6.3V
C2619	79091242	CS0YCH4E2J	CC	150 PF 50V CH
C2620	72531765	E50HU5010M	CE	1 UF 50V
C2621	79091242	CS0YCH4E2J	CC	150 PF 50V CH
C2622	79091242	CS0YCH4E2J	CC	150 PF 50V CH
C2623	79091064	CS0PCH4L1J	CC	33 PF 50V CH
C2625	79091052	CS0PB0215K	CC	0.1 UF 16V B
C2626	79091070	CS0PCH4U1J	CC	68 PF 50V CH
C2627	79091243	CS0YCH4H2J	CC	220 PF 50V CH
C2629	79091069	CS0PCH4S2J	CC	560 PF 50V CH
C2631	79091244	CS0YCH4L1J	CC	33 PF 50V CH
C2633	79091305	CS0YCH4Q1J	CC	47 PF 50V CH
C2634	79091240	CS0YCH412J	CC	100 PF 50V CH
C2635	72531764	E50HU2470M	CE	47 UF 16V
C2636	79091308	CS0YCH4W1J	CC	82 PF 50V CH
C2637	79091307	CS0YCH4S1J	CC	56 PF 50V CH
C2639	79091243	CS0YCH4H2J	CC	220 PF 50V CH
C2640	79091302	CS0YB04Q3K	CC	0.0047UF 50V B
C2641	79091244	CS0YCH4L1J	CC	33 PF 50V CH
C2642	79091303	CS0YCH4H1J	CC	22 PF 50V CH
C2643	79091306	CS0YCH4Q2J	CC	470 PF 50V CH
C2644	79091061	CS0PCH4G1J	CC	18 PF 50V CH
C2645	79091242	CS0YCH4E2J	CC	150 PF 50V CH
C2646	79091243	CS0YCH4H2J	CC	220 PF 50V CH
C2647	79091305	CS0YCH4Q1J	CC	47 PF 50V CH
C2648	79091233	CS0YB0215K	CC	0.1 UF 16V B
C2649	79091233	CS0YB0215K	CC	0.1 UF 16V B
C2650	79091052	CS0PB0215K	CC	0.1 UF 16V B
C2651	79091233	CS0YB0215K	CC	0.1 UF 16V B
C2652	72001223	E50HU0470M	CE	47 UF 6.3V
C2653	79091052	CS0PB0215K	CC	0.1 UF 16V B
C2654	72001223	E50HU0470M	CE	47 UF 6.3V
C2655	72001223	E50HU0470M	CE	47 UF 6.3V
C2656	79091233	CS0YB0215K	CC	0.1 UF 16V B
C2658	79091233	CS0YB0215K	CC	0.1 UF 16V B
C2659	79091052	CS0PB0215K	CC	0.1 UF 16V B
C3001	72001165	CS0RB0216K	CC	1 UF 16V B
C3003	72531763	E50HU2100M	CE	10 UF 16V
C3004	79091079	CS0RB04H4K	CC	0.022 UF 50V B
C3005	79091074	CS0RB0413K	CC	0.001 UF 50V B
C3006	79091074	CS0RB0413K	CC	0.001 UF 50V B
C3007	79091073	CS0RB0315K	CC	0.1 UF 25V B
C3008	79091082	CS0RB04Q3K	CC	0.0047UF 50V B
C3009	79091073	CS0RB0315K	CC	0.1 UF 25V B
C3010	79091074	CS0RB0413K	CC	0.001 UF 50V B
C3013	72001221	E50HU0220M	CE	22 UF 6.3V
C3014	BZ110151	CS0RF0415Z	CC	0.1 UF 50V F
C3015	79091088	CS0RCH4W2J	CC	820 PF 50V CH
C3016	72001223	E50HU0470M	CE	47 UF 6.3V
C3017	79091048	CS0KCH4B1J	CC	12 PF 50V CH
C3018	79091085	CS0RCH4E2J	CC	150 PF 50V CH
C3019	79091073	CS0RB0315K	CC	0.1 UF 25V B
C3020	79091079	CS0RB04H4K	CC	0.022 UF 50V B
C3021	72531763	E50HU2100M	CE	10 UF 16V
C3022	79091087	CS0RCH4Q2J	CC	470 PF 50V CH
C3023	72001214	E02LU0221M	CE	220 UF 6.3V
C3024	79091050	CS0KCH4G1J	CC	18 PF 50V CH
C3025	79091050	CS0KCH4G1J	CC	18 PF 50V CH
C3027	BZ110151	CS0RF0415Z	CC	0.1 UF 50V F
C3029	72001223	E50HU0470M	CE	47 UF 6.3V
C3030	BZ110151	CS0RF0415Z	CC	0.1 UF 50V F
C3031	79091077	CS0RB04E3K	CC	0.0015UF 50V B

ELECTRICAL REPLACEMENT PARTS LIST

Location No.	TSB P/N	Reference No.	Description	
		CAPACITORS		
C3032	72531767	E50HU52R2M	CE	2.2 UF 50V
C3033	72001211	E02LT4331M	CE	330 UF 35V
C3034	72001186	CS0RF0316Z	CC	1 UF 25V F
C3036	BZ110151	CS0RF0415Z	CC	0.1 UF 50V F
C3038	72001186	CS0RF0316Z	CC	1 UF 25V F
C3039	79091048	CS0KCH4B1J	CC	12 PF 50V CH
C3041	79091045	CQGTB04E3K	CC	0.0015UF 50V B
C3044	79091048	CS0KCH4B1J	CC	12 PF 50V CH
C3045	79091098	E50HU5R47M	CE	0.47 UF 50V
C3046	79091049	CS0KCH4E1J	CC	15 PF 50V CH
C3047	79091049	CS0KCH4E1J	CC	15 PF 50V CH
C3049	79091084	CS0RCH412J	CC	100 PF 50V CH
C3050	79091075	CS0RB0414K	CC	0.01 UF 50V B
C3052	72001221	E50HU0220M	CE	22 UF 6.3V
C3053	79091073	CS0RB0315K	CC	0.1 UF 25V B
C3061	BZ110151	CS0RF0415Z	CC	0.1 UF 50V F
C3065	BZ110151	CS0RF0415Z	CC	0.1 UF 50V F
C4001	79091072	CS0PF0315Z	CC	0.1 UF 25V F
C4002	79091246	CS0YF0315Z	CC	0.1 UF 25V F
C4003	79091246	CS0YF0315Z	CC	0.1 UF 25V F
C4004	79091246	CS0YF0315Z	CC	0.1 UF 25V F
C4005	79091246	CS0YF0315Z	CC	0.1 UF 25V F
C4006	79091246	CS0YF0315Z	CC	0.1 UF 25V F
C4007	79091246	CS0YF0315Z	CC	0.1 UF 25V F
C4008	79091246	CS0YF0315Z	CC	0.1 UF 25V F
C4009	79091072	CS0PF0315Z	CC	0.1 UF 25V F
C4010	79091072	CS0PF0315Z	CC	0.1 UF 25V F
C4011	79091072	CS0PF0315Z	CC	0.1 UF 25V F
C4012	79091058	CS0PCH430C	CC	3 PF 50V CH
C4013	79091058	CS0PCH430C	CC	3 PF 50V CH
C4014	79091072	CS0PF0315Z	CC	0.1 UF 25V F
C4015	79091072	CS0PF0315Z	CC	0.1 UF 25V F
C4016	79091072	CS0PF0315Z	CC	0.1 UF 25V F
C4017	79091100	E62FU0151M	CE	150 UF 6.3V
C4018	79091072	CS0PF0315Z	CC	0.1 UF 25V F
C4019	79091246	CS0YF0315Z	CC	0.1 UF 25V F
C4020	79091100	E62FU0151M	CE	150 UF 6.3V
C4022	79091246	CS0YF0315Z	CC	0.1 UF 25V F
C4023	79091100	E62FU0151M	CE	150 UF 6.3V
C4024	79091246	CS0YF0315Z	CC	0.1 UF 25V F
C4025	72001223	E50HU0470M	CE	47 UF 6.3V
C4026	79091246	CS0YF0315Z	CC	0.1 UF 25V F
C4027	79091246	CS0YF0315Z	CC	0.1 UF 25V F
C4028	79091246	CS0YF0315Z	CC	0.1 UF 25V F
C4029	72001223	E50HU0470M	CE	47 UF 6.3V
C4030	79091246	CS0YF0315Z	CC	0.1 UF 25V F
C4031	79091072	CS0PF0315Z	CC	0.1 UF 25V F
C4032	79091246	CS0YF0315Z	CC	0.1 UF 25V F
C4033	79091072	CS0PF0315Z	CC	0.1 UF 25V F
C4034	79091246	CS0YF0315Z	CC	0.1 UF 25V F
C4035	79091072	CS0PF0315Z	CC	0.1 UF 25V F
C4036	79091072	CS0PF0315Z	CC	0.1 UF 25V F
C4037	79091246	CS0YF0315Z	CC	0.1 UF 25V F
C4038	79091072	CS0PF0315Z	CC	0.1 UF 25V F
C4039	79091246	CS0YF0315Z	CC	0.1 UF 25V F
C4040	79091246	CS0YF0315Z	CC	0.1 UF 25V F
C4041	79091097	E50HU2101M	CE	100 UF 16 V
C4043	79091097	E50HU2101M	CE	100 UF 16 V
C4044	79091246	CS0YF0315Z	CC	0.1 UF 25V F
C4045	79091097	E50HU2101M	CE	100 UF 16 V
C8003	72531763	E50HU2100M	CE	10 UF 16V
C8008	79091084	CS0RCH412J	CC	100 PF 50V CH
C8009	72531751	E02LU0471M	CE	470 UF 6.3V
C8010	79091073	CS0RB0315K	CC	0.1 UF 25V B
C8011	79091084	CS0RCH412J	CC	100 PF 50V CH
C8012	79091073	CS0RB0315K	CC	0.1 UF 25V B
C8013	72531757	E02LU5100M	CE	10 UF 50V
C8015	72531751	E02LU0471M	CE	470 UF 6.3V

ELECTRICAL REPLACEMENT PARTS LIST

Location No.	TSB P/N	Reference No.	Description	
		CAPACITORS		
C8020	72531763	E50HU2100M	CE	10 UF 16V
C8021	72531763	E50HU2100M	CE	10 UF 16V
C8022	79091093	E00NU52R2M	CE	2.2 UF 50V
C8023	79091093	E00NU52R2M	CE	2.2 UF 50V
C8024	72531763	E50HU2100M	CE	10 UF 16V
C8025	79091088	CS0RCH4W2J	CC	820 PF 50V CH
C8026	BZ110151	CS0RF0415Z	CC	0.1 UF 50V F
C8027	79099008	E02LU2221M	CE	220 UF 16V
C8028	72531763	E50HU2100M	CE	10 UF 16V
C8029	72531763	E50HU2100M	CE	10 UF 16V
C8030	72531763	E50HU2100M	CE	10 UF 16V
C8031	72001227	E50HU54R7M	CE	4.7 UF 50V
C8032	79091092	E00NU24R7M	CE	4.7 UF 16 V
C8033	72531763	E50HU2100M	CE	10 UF 16V
C8037	72531751	E02LU0471M	CE	470 UF 6.3V
C8038	72531751	E02LU0471M	CE	470 UF 6.3V
C8039	72531751	E02LU0471M	CE	470 UF 6.3V
C8040	72001227	E50HU54R7M	CE	4.7 UF 50V
C8041	BZ110151	CS0RF0415Z	CC	0.1 UF 50V F
C8042	72531763	E50HU2100M	CE	10 UF 16V
C8043	72531763	E50HU2100M	CE	10 UF 16V
C8045	72001216	E02LU2101M	CE	100 UF 16V
C8048	72531751	E02LU0471M	CE	470 UF 6.3V
C8049	BZ110151	CS0RF0415Z	CC	0.1 UF 50V F
C8052	72001227	E50HU54R7M	CE	4.7 UF 50V
C8053	72001225	E50HU2220M	CE	22 UF 16 V
C8054	BZ110151	CS0RF0415Z	CC	0.1 UF 50V F
C8064	79091088	CS0RCH4W2J	CC	820 PF 50V CH
C8065	72001224	E50HU1330M	CE	33 UF 10 V
C8070	79091077	CS0RB04E3K	CC	0.0015UF 50V B
C8077	79091077	CS0RB04E3K	CC	0.0015UF 50V B
C8079	79091084	CS0RCH412J	CC	100 PF 50V CH
C8081	79091084	CS0RCH412J	CC	100 PF 50V CH
C8090	BZ110151	CS0RF0415Z	CC	0.1 UF 50V F
C8094	72001223	E50HU0470M	CE	47 UF 6.3V
C8095	79091079	CS0RB04H4K	CC	0.022 UF 50V B
C8096	BZ110151	CS0RF0415Z	CC	0.1 UF 50V F
C8097	72001223	E50HU0470M	CE	47 UF 6.3V
C8098	BZ110151	CS0RF0415Z	CC	0.1 UF 50V F
C8102	72531767	E50HU52R2M	CE	2.2 UF 50V
C8103	72531789	E02LT2471M	CE	470 UF 16V
C8104	72001225	E50HU2220M	CE	22 UF 16 V
C8105	72001225	E50HU2220M	CE	22 UF 16 V
C8106	72531767	E50HU52R2M	CE	2.2 UF 50V
C8503	72531763	E50HU2100M	CE	10 UF 16V
C8506	79091246	CS0YF0315Z	CC	0.1 UF 25V F
C8516	72001165	CS0RB0216K	CC	1 UF 16V B
C8517	72001165	CS0RB0216K	CC	1 UF 16V B
C8518	72001165	CS0RB0216K	CC	1 UF 16V B
C8519	72001165	CS0RB0216K	CC	1 UF 16V B
C8520	79091072	CS0PF0315Z	CC	0.1 UF 25V F
C8521	79091246	CS0YF0315Z	CC	0.1 UF 25V F
C8522	79091097	E50HU2101M	CE	100 UF 16 V
C8523	79091097	E50HU2101M	CE	100 UF 16 V
C8524	79091246	CS0YF0315Z	CC	0.1 UF 25V F
C8525	79091101	E62FU1121M	CE	120 UF 10V
C8526	79091101	E62FU1121M	CE	120 UF 10V
C8529	79091089	CS0RF02H6Z	CC	2.2 UF 16V F
C8530	79091089	CS0RF02H6Z	CC	2.2 UF 16V F
C8534	79091097	E50HU2101M	CE	100 UF 16 V
C8535	79091246	CS0YF0315Z	CC	0.1 UF 25V F
C8536	72001221	E50HU0220M	CE	22 UF 6.3V
C8537	72001221	E50HU0220M	CE	22 UF 6.3V
C8538	79091246	CS0YF0315Z	CC	0.1 UF 25V F
		DIODES		
⚠ D502	79099015	D2WTRM11C0	DIODE,SILICON	RM11C-EIC
⚠ D503	79099015	D2WTRM11C0	DIODE,SILICON	RM11C-EIC
⚠ D505	79099015	D2WTRM11C0	DIODE,SILICON	RM11C-EIC

ELECTRICAL REPLACEMENT PARTS LIST

Location No.	TSB P/N	Reference No.	Description	
		DIODES		
⚠ D506	79099015	D2WTRM11C0	DIODE,SILICON	RM11C-EIC
⚠ D507	79099016	D2WXB290S0	DIODE,SILICON	SB290S
D509	79099017	D2WXGP10J0	DIODE,RECTIFIER	RGP10J-EIC
D510	79099018	D97U03001B	DIODE,ZENER	MTZJ30B T-77
⚠ D512	79099019	D2LKB340L0	DIODE,SCHOTTKY	SB340L-6737
⚠ D515	79099019	D2LKB340L0	DIODE,SCHOTTKY	SB340L-6737
⚠ D518	79099033	D1VT001330	DIODE,SILICON	1SS133T-77
D521	79099021	D28TELS2N2	DIODE,RECTIFIER	10ELS2N-TA1B2
⚠ D522	AD300075	D28TELS6N6	DIODE,RECTIFIER	10ELS6N-TA1B2
D523	79099023	D97U03301B	DIODE,ZENER	MTZJ33B T-77
D524	79099033	D1VT001330	DIODE,SILICON	1SS133T-77
D525	79099025	D2WXN40050	DIODE,SILICON	1N4005-EIC
D526	79099028	D97U02401B	DIODE,ZENER	MTZJ24B T-77
⚠ D529	79099016	D2WXB290S0	DIODE,SILICON	SB290S
D530	AD300075	D28TELS6N6	DIODE,RECTIFIER	10ELS6N-TA1B2
D531	AD300671	D97U01801B	DIODE,ZENER	MTZJ18B T-77
D532	79099021	D28TELS2N2	DIODE,RECTIFIER	10ELS2N-TA1B2
D601	79099027	D97U05R11C	DIODE,ZENER	MTZJ5.1C T-77
D604	79099029	D97U03R61B	DIODE,ZENER	MTZJ3.6B T-77
D681	79099024	0021E5Q210	LED	LTL-1CHGE-002A
D685	79099024	0021E5Q210	LED	LTL-1CHGE-002A
D701	79099033	D1VT001330	DIODE,SILICON	1SS133T-77
D1001	79097836	DDDRL41480	DIODE,SILICON	MCL4148
D1701	79099031	D97U01301B	DIODE,ZENER	MTZJ13B T-77
D1702	79099033	D1VT001330	DIODE,SILICON	1SS133T-77
D1706	79099032	D97U01001B	DIODE,ZENER	MTZJ10B T-77
D2601	79097835	DDARDS1210	DIODE,SILICON	KDS121RTK
D2602	79097834	DDARDS1200	DIODE,SILICON	KDS120RTK
D3001	79099030	0010100320	INFRARED LED	LNA2702L010R
D3007	79099033	D1VT001330	DIODE,SILICON	1SS133T-77
D3009	79099033	D1VT001330	DIODE,SILICON	1SS133T-77
D8004	79099033	D1VT001330	DIODE,SILICON	1SS133T-77
D8010	79099033	D1VT001330	DIODE,SILICON	1SS133T-77
D8501	79099034	DD5R002260	DIODE,SILICON	1SS226(TE85L)
D8502	79099034	DD5R002260	DIODE,SILICON	1SS226(TE85L)
D8503	79099034	DD5R002260	DIODE,SILICON	1SS226(TE85L)
D8504	79099034	DD5R002260	DIODE,SILICON	1SS226(TE85L)
D8505	79099034	DD5R002260	DIODE,SILICON	1SS226(TE85L)
D8506	79099034	DD5R002260	DIODE,SILICON	1SS226(TE85L)
		ICS		
IC101	79099035	I03F3205M0	IC	LA71205M-MPB
⚠ IC501	79099036	I1KJ9A4310	IC	KIA431
⚠ IC502	79099037	I1KA97809A	IC	KIA7809API
⚠ IC503	79099038	0002E00610	PHOTO COUPLER	LTV-817M-VB
IC601	79099039	I07F529770	IC	BU2977FS
IC701	79099040	I01F63FBP0	IC	AN3663FBP
IC1001	79097851	ICQF067050	IC	ZR36705
IC1006	79097848	I5HJ004BF0	IC	S-24C04BFJ-TB
IC2001	79097846	I53F086610	IC	LC78661W
IC2002	79099046	I59J0258B3	IC	MSM5416258B-30
IC2002	79097774	ICUJ0256A2	IC	M11B416256A-25T
IC2301	79097837	I03F065600	IC	LA6560
IC2601	79097841	I07F04066F	IC	BU4066BCF
IC2602	79097838	I03FR97020	IC	LA9702WL
IC3001	79091309	I54F50125A	IC	OEC0125A
IC3003	79099051	I9UF032310	IC	PST3231NR
IC3099	79091296	A2B016C015	IC	S-24C02BDP-1A
IC4001	79099053	ICQF067320	IC	ZR36732
IC4002	79099055	I59J0160FB	IC	MSM56V16160F-8
IC4002	79040348	ICLJ0610DB	IC	HY57V161610DTC-8
IC4005	79097850	ICMJ0800A7	IC	SST39VF800A-70-4C-EK
IC4006	79097843	I0GF9XZ010	IC	PQ070XZ01ZP
IC8001	79099057	I5CF040530	IC	CD4053BNSR
IC8002	79099058	I0QF02533V	IC	NJM2533V(TE2)
IC8003	79099059	I0QF045800	IC	NJM4580M
IC8004	79099059	I0QF045800	IC	NJM4580M
IC8005	79099058	I0QF02533V	IC	NJM2533V(TE2)
IC8501	79099062	I0UFG540A0	IC	MM1540AFBE

ELECTRICAL REPLACEMENT PARTS LIST

Location No.	TSB P/N	Reference No.	Description	
		ICS		
IC8503	79040351	I17F017480	IC	PCM1748E
IC8504	79040352	I5CF040520	IC	SN74LV4052APW
		TRANSISTORS		
Q101	79099063	TCATC31980	TRANSISTOR,SILICON	KTC3198-AT(Y,GR)
Q102	79099063	TCATC31980	TRANSISTOR,SILICON	KTC3198-AT(Y,GR)
Q103	79099064	TPAAC05002	COMPOUND TRANSISTOR	KRA103SRTK
Q104	79099065	TCAT032034	TRANSISTOR,SILICON	KTC3203_Y-AT
Q105	79099066	TAATA12660	TRANSISTOR,SILICON	KTA1266-AT(Y,GR)
Q106	79099067	T6YJ1037K0	TRANSISTOR,SILICON	2SA1037AKT146R,S
Q107	79099067	T6YJ1037K0	TRANSISTOR,SILICON	2SA1037AKT146R,S
Q109	79099068	T8YJ2412K0	TRANSISTOR,SILICON	2SC2412KT146 R,S
Q301	79099068	T8YJ2412K0	TRANSISTOR,SILICON	2SC2412KT146 R,S
Q303	79099069	TNAAC05002	COMPOUND TRANSISTOR	KRC103SRTK
⚠ Q501	79099070	TJXG5NC500	FET	STP5NC50FP
⚠ Q502	79099071	TC5T021204	TRANSISTOR,SILICON	2SC2120Y(TPE2)
⚠ Q504	79099072	TB3T011310	TRANSISTOR,SILICON	2SB1131(S,T)-AE
⚠ Q505	79099073	TCAT03209Y	TRANSISTOR,SILICON	KTC3209_Y-AT
Q506	79099074	TNATA03002	COMPOUND TRANSISTOR	KRC101MAT
Q601	79099063	TCATC31980	TRANSISTOR,SILICON	KTC3198-AT(Y,GR)
Q602	79099073	TCAT03209Y	TRANSISTOR,SILICON	KTC3209_Y-AT
Q666	79099064	TPAAC05002	COMPOUND TRANSISTOR	KRA103SRTK
Q667	79099075	TPAAB05001	COMPOUND TRANSISTOR	KRA102SRTK
⚠ Q1701	79099065	TCAT032034	TRANSISTOR,SILICON	KTC3203_Y-AT
⚠ Q1702	79099073	TCAT03209Y	TRANSISTOR,SILICON	KTC3209_Y-AT
⚠ Q1703	79099073	TCAT03209Y	TRANSISTOR,SILICON	KTC3209_Y-AT
Q1704	79099069	TNAAC05002	COMPOUND TRANSISTOR	KRC103SRTK
⚠ Q1705	79099065	TCAT032034	TRANSISTOR,SILICON	KTC3203_Y-AT
⚠ Q1706	79097791	TAAT01241Y	TRANSISTOR,SILICON	KTA1241_Y-AT
Q1707	79099068	T8YJ2412K0	TRANSISTOR,SILICON	2SC2412KT146 R,S
Q1708	79099068	T8YJ2412K0	TRANSISTOR,SILICON	2SC2412KT146 R,S
⚠ Q1713	79099087	TAAT012714	TRANSISTOR,SILICON	KTA1271_Y-AT
Q1714	79099069	TNAAC05002	COMPOUND TRANSISTOR	KRC103SRTK
Q2301	79099099	TCAA3875SY	TRANSISTOR,SILICON	KTC3875S_Y_RTK
Q2302	79099098	TAAA1504SY	TRANSISTOR,SILICON	KTA1504S_Y_RTK
Q2303	79099089	TNAAB05003	COMPOUND TRANSISTOR	KRC102SRTK
Q2304	79099098	TAAA1504SY	TRANSISTOR,SILICON	KTA1504S_Y_RTK
Q2601	79099099	TCAA3875SY	TRANSISTOR,SILICON	KTC3875S_Y_RTK
Q2603	79097868	T67J1036K0	TRANSISTOR,SILICON	2SA1036KT146
Q2604	79097868	T67J1036K0	TRANSISTOR,SILICON	2SA1036KT146
Q2605	79099098	TAAA1504SY	TRANSISTOR,SILICON	KTA1504S_Y_RTK
Q2606	79099099	TCAA3875SY	TRANSISTOR,SILICON	KTC3875S_Y_RTK
Q2607	79097867	T27T030180	FET	2SK3018
Q2608	79099099	TCAA3875SY	TRANSISTOR,SILICON	KTC3875S_Y_RTK
Q2609	79099099	TCAA3875SY	TRANSISTOR,SILICON	KTC3875S_Y_RTK
Q2610	79099099	TCAA3875SY	TRANSISTOR,SILICON	KTC3875S_Y_RTK
Q2611	79099098	TAAA1504SY	TRANSISTOR,SILICON	KTA1504S_Y_RTK
Q2612	79097867	T27T030180	FET	2SK3018
Q2613	79097867	T27T030180	FET	2SK3018
Q2614	79099099	TCAA3875SY	TRANSISTOR,SILICON	KTC3875S_Y_RTK
Q2615	79099099	TCAA3875SY	TRANSISTOR,SILICON	KTC3875S_Y_RTK
Q2616	79099099	TCAA3875SY	TRANSISTOR,SILICON	KTC3875S_Y_RTK
Q3001	79099093	0002700690	PHOTO COUPLER	RPI-303
Q3002	79099093	0002700690	PHOTO COUPLER	RPI-303
Q3004	79099094	0002700680	PHOTO COUPLER	RPI-352C40N
Q3005	79099094	0002700680	PHOTO COUPLER	RPI-352C40N
Q3006	79097377	0000M00390	PHOTO TRANSISTOR	ST-304L
Q3008	79097377	0000M00390	PHOTO TRANSISTOR	ST-304L
Q8001	79099067	T6YJ1037K0	TRANSISTOR,SILICON	2SA1037AKT146R,S
Q8002	79099068	T8YJ2412K0	TRANSISTOR,SILICON	2SC2412KT146 R,S
Q8003	79099069	TNAAC05002	COMPOUND TRANSISTOR	KRC103SRTK
Q8004	79099066	TAATA12660	TRANSISTOR,SILICON	KTA1266-AT(Y,GR)
Q8005	79099068	T8YJ2412K0	TRANSISTOR,SILICON	2SC2412KT146 R,S
Q8006	79099068	T8YJ2412K0	TRANSISTOR,SILICON	2SC2412KT146 R,S
Q8007	79099064	TPAAC05002	COMPOUND TRANSISTOR	KRA103SRTK
Q8008	BZ510021	TNYJC05001	COMPOUND TRANSISTOR	DTC124EKAT146
Q8010	79099068	T8YJ2412K0	TRANSISTOR,SILICON	2SC2412KT146 R,S
Q8011	79099096	TNAAD05001	COMPOUND TRANSISTOR	KRC104SRTK
Q8012	79099069	TNAAC05002	COMPOUND TRANSISTOR	KRC103SRTK

ELECTRICAL REPLACEMENT PARTS LIST

Location No.	TSB P/N	Reference No.	Description	
		TRANSISTORS		
Q8013	79099097	TPAAA05001	COMPOUND TRANSISTOR	KRA101SRTK
Q8014	79099068	T8YJ2412K0	TRANSISTOR,SILICON	2SC2412KT146 R,S
Q8015	79099068	T8YJ2412K0	TRANSISTOR,SILICON	2SC2412KT146 R,S
Q8506	79099090	TS5M000037	COMPOUND TRANSISTOR	HN1C03F_B(TE85L)
		COILS & TRANSSFORMERS		
L101	72001083	031626009R	COIL,BIAS OSC	1626009
L102	BZ310041	02167F101J	COIL	100 UH
L104	BZ310039	02167F220J	COIL	22 UH
L105	BZ310039	02167F220J	COIL	22 UH
L106	BZ310039	02167F220J	COIL	22 UH
L107	BZ310039	02167F220J	COIL	22 UH
L301	BZ310002	021673101K	COIL	100 UH
L302	BZ310039	02167F220J	COIL	22 UH
⚠ L501	79099100	029T0000A1	COIL,LINE FILTER	0R7A223F24
L502	AD301539	02AHB0A0A4	CORE,FERRITE	W5T_20*10*10A
⚠ L503	79099101	02167E220K	COIL	R9 22 UH
L505	BZ310039	02167F220J	COIL	22 UH
L506	79099101	02167E220K	COIL	R9 22 UH
L507	79099101	02167E220K	COIL	R9 22 UH
L701	BZ310039	02167F220J	COIL	22 UH
L702	BZ310039	02167F220J	COIL	22 UH
L703	BZ310201	0216A6101K	COIL	100 UH
L704	BZ310039	02167F220J	COIL	22 UH
L1001	BZ310191	02167F2R2J	COIL	2.2 UH
L3003	BZ310038	021LA6120K	COIL	12 UH
L8001	AD301541	021LA6R27M	COIL	0.27 UH
L8002	BZ310201	0216A6101K	COIL	100 UH
L8003	AD301541	021LA6R27M	COIL	0.27 UH
L8004	BZ310029	021LA6470K	COIL	47 UH
L8007	BZ310201	0216A6101K	COIL	100 UH
L8008	BZ310029	021LA6470K	COIL	47 UH
L8013	BZ310162	0216A6220K	COIL	22 UH
L8505	AD300613	02167F150J	COIL	15 UH
L8507	BZ310118	02AHB9A972	CORE,FERRITE	W5T29X7.5X19
⚠ T501	79099102	048129093S	TRANSFORMER,SWITCHING	8129093S
		JACK		
J601	79099103	060Q401086	RCA JACK	AV1-06DG-1
J602	79099103	060Q401086	RCA JACK	AV1-06DG-1
J603	79099104	060Q421024	RCA JACK	AV1-06DSG-1
J8001	79099105	060J411018	RCA JACK	MSP-213V1-432 PBSN
J8002	AD301038	060J431019	RCA JACK	MSP-213V2-432 PBSN
J8006	79099107	063D700005	JACK	MDC-070V
J8007	79099108	060J401082	RCA JACK	MSP-251V-05PBSN
J8008	AD301037	060J411024	RCA JACK	MSP-213V1-652 PBSN
J8009	79099110	060J411020	RCA JACK	MSP-242V2-01PBSN
		SWITCHES		
SW301	79099111	0510S21041	SWITCH SLIDE	SLD-12-592
SW601	79099112	0504201T32	SWITCH,TACT	SKQNAED010
SW602	79099112	0504201T32	SWITCH,TACT	SKQNAED010
SW603	79099112	0504201T32	SWITCH,TACT	SKQNAED010
SW604	79099112	0504201T32	SWITCH,TACT	SKQNAED010
SW605	79099112	0504201T32	SWITCH,TACT	SKQNAED010
SW681	79099112	0504201T32	SWITCH,TACT	SKQNAED010
SW682	79099112	0504201T32	SWITCH,TACT	SKQNAED010
SW684	79099112	0504201T32	SWITCH,TACT	SKQNAED010
SW686	79099112	0504201T32	SWITCH,TACT	SKQNAED010
SW687	79099112	0504201T32	SWITCH,TACT	SKQNAED010
SW688	79099112	0504201T32	SWITCH,TACT	SKQNAED010
SW689	79099112	0504201T32	SWITCH,TACT	SKQNAED010
SW3001	79097386	0508S11001	SWITCH (LEAF)	LSA-1144EAU
		P.C.BOARD ASSEMBLIES		
PCB010	79091295	A2B016C010	VCR MT PCB ASS'Y	VMB253A
PCB130	79091297	A2B016C130	DVD MT PCB ASS'Y	VMB261A
PCB240	79091298	A2B016C240	POWER PCB ASS'Y	VPA152A
PCB270	79091299	A2B016C270	OPERATION PCB ASS'Y	VEA978A
PCB280	79091300	A2B016C280	OPERATION 2 PCB ASS'Y	VEA979A
PCB390	79091301	A2B016C390	DISPLAY PCB ASS'Y	VEA972A

ELECTRICAL REPLACEMENT PARTS LIST

Location No.	TSB P/N	Reference No.	Description	
			MISCELLANEOUS	
B501	BZ310122	024HT03563	CORE,BEADS	W4BRH3.5X6X1.0X2
B503	BZ310129	024HT03564	CORE,BEADS	W4BRH3.5X6X1
B1001	BZ310186	024HC31022	CORE,BEADS	FCM2012H-102T04
B1002	BZ310186	024HC31022	CORE,BEADS	FCM2012H-102T04
B2001	BZ310186	024HC31022	CORE,BEADS	FCM2012H-102T04
B2002	BZ310186	024HC31022	CORE,BEADS	FCM2012H-102T04
B2003	BZ310186	024HC31022	CORE,BEADS	FCM2012H-102T04
B2601	BZ310186	024HC31022	CORE,BEADS	FCM2012H-102T04
B2602	BZ310186	024HC31022	CORE,BEADS	FCM2012H-102T04
B2604	BZ310186	024HC31022	CORE,BEADS	FCM2012H-102T04
B2605	BZ310186	024HC31022	CORE,BEADS	FCM2012H-102T04
B2606	BZ310186	024HC31022	CORE,BEADS	FCM2012H-102T04
B4001	BZ310186	024HC31022	CORE,BEADS	FCM2012H-102T04
B4002	BZ310186	024HC31022	CORE,BEADS	FCM2012H-102T04
B4003	BZ310186	024HC31022	CORE,BEADS	FCM2012H-102T04
B4004	BZ310186	024HC31022	CORE,BEADS	FCM2012H-102T04
B8001	BZ310129	024HT03564	CORE,BEADS	W4BRH3.5X6X1
B8501	BZ310186	024HC31022	CORE,BEADS	FCM2012H-102T04
B8502	BZ310186	024HC31022	CORE,BEADS	FCM2012H-102T04
BT601	79091206	1412004008	BATTERY,MANGAN	R03(AB)E_20_T
CD102	79099120	122F061502	CORD,JUMPER	2F061502
⚠ CD501	79099121	120R419905	CORD,AC BUSH	0R419905
CD502	79099122	122Y0G1701	CORD,JUMPER	2Y0G1701
CD651	79099123	122H072402	CORD,JUMPER	2H072402
CD652	79099124	122S0I0802	CORD,JUMPER	2S0I0802
CP101	79099125	0697290620	CONNECTOR PCB SIDE	TOC-C09X-A1
CP102	79099126	069J760029	CONNECTOR PCB SIDE	IMSA-9604S-06Z14
CP103	79099127	0697120320	CONNECTOR PCB SIDE	TMC-T02X-E1
CP502	79099128	067U016019	WIRE HOLDER	B2013H02-16P
CP503	79099129	069S260629	CONNECTOR PCB SIDE	A2001WV2-6P
CP601	79099130	069R7I0479	CONNECTOR PCB SIDE	52492-1820
CP651	79099131	069J770019	CONNECTOR PCB SIDE	IMSA-9604S-07Z13
CP652	79099132	069J7I0029	CONNECTOR PCB SIDE	IMSA-9604S-18Z14
CP681	79099133	069R770479	CONNECTOR PCB SIDE	52492-0720
CD2301	79097814	122H081007	CORD,JUMPER	2H081007
CD2302	79097806	06CU251002	CORD,CONNECTOR	CU251002
CD2601	BZ614437	122H0O2102	CORD,JUMPER	2H0O2102
CD6002	79099136	06CQL03001	CABLE	SI-C109-31
CD6003	79091290	06CPBA2003	CORD,RCA PIN	TD-020301-3
CD8002	79099138	122H0I1801	CORD,JUMPER	2H0I1801
CD8501	79091010	06CU2D3201	CORD,CONNECTOR	CU2D3201
CD8502	79099140	06CU262501	CORD,CONNECTOR	CU262501
CP1701	79099141	069R2G0589	CONNECTOR PCB SIDE	52147-1610
CP2301	BZ614439	069EV83020	CONNECTOR PCB SIDE	00_6232_008_102_800
CP2302	72001108	069S250639	CONNECTOR PCB SIDE	A2001WR2-5P
CP2601	BZ614494	069XYOT059	CONNECTOR PCB SIDE	24FLZ-RSM1-TB
CP2601	BZ614441	069EYOT040	CONNECTOR PCB SIDE	08_6210_024_340_800
CP3001	79099011	06972C0010	CONNECTOR PCB SIDE	TMC-J12P-B2
CP8001	79099144	069S2D0629	CONNECTOR PCB SIDE	A2001WV2-13P
CP8002	79099145	069J7I0019	CONNECTOR PCB SIDE	IMSA-9604S-18Z13
CP8502	79099132	069J7I0029	CONNECTOR PCB SIDE	IMSA-9604S-18Z14
CUS811	79099146	800WFAA006	CUSHION A	
⚠ DK4001	BZ310397	169G00014A	DECK CD	DVD-KDR717SK
⚠ F501	AD302166	081PC04005	FUSE	51MS040L
⚠ F501	AD300688	081PC04004	FUSE	51MS040LCC
FH501	72561289	06710T0006	HOLDER,FUSE	EYF-52BC
FH502	72561289	06710T0006	HOLDER,FUSE	EYF-52BC
OS601	79099149	077Q037002	REMOTE RECEIVER	PIC-37143TH5
OS8001	79099150	07A9000004	OPTICAL DEVICE	GP1FA550TZ
OS8001	79091292	07A9000005	OPTICAL DEVICE	GP1FA551TZ
TM601	79091291	076R0FE010	TRANSMITTER	R25-1781
TM601	79099151	07660FE010	TRANSMITTER	SBKM00033A
⚠ TU301	79091289	0162300032	RF UNIT	115-V-D065AM D
V601	79097396	096F90R403	TUBE FLUORSCENT DISP	LAY HNV-09SS33
X101	79091293	100DT3R528	CRYSTAL	HC-49/U
X101	79099154	100CT3R508	CRYSTAL	HC-49/U
X1001	79089152	100CT01210	CRYSTAL	HC-49/U
X2001	79097812	100CT01604	CRYSTAL	HC-49/U-S

ELECTRICAL REPLACEMENT PARTS LIST

Location No.	TSB P/N	Reference No.	Description	
		MISCELLANEOUS		
X3001	79099156	100CT01002	CRYSTAL	HC-49/U-S
X3002	79099157	100DA32R01	CRYSTAL	DT-26
X3003	79099158	100CT01403	CRYSTAL	HC-49/U-S
X4001	79099159	100WT02706	CRYSTAL	HC-49/U-S

RESISTOR

RC.....	CARBON RESISTOR

CAPACITORS

CC.....	CERAMIC CAPACITOR
CE.....	ALUMI ELECTROLYTIC CAPACITOR
CP.....	POLYESTER CAPACITOR
CPP.....	POLYPROPYLENE CAPACITOR
CPL.....	PLASTIC CAPACITOR
CMP.....	METAL POLYESTER CAPACITOR
CMPL.....	METAL PLASTIC CAPACITOR
CMPP.....	METAL POLYPROPYLENE CAPACITOR

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